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NEWS IN BRIEF

BM denies cancer risk

IBM has denied reports by the Banking Insurance and Finance Union that a toning substance used in its 3800 laser printer is a possible carcinogen.

Union research assistant Andy Egan said cautionary advice to his membership was based on a US Environmental Protection Agency report which indicated that the toning substance active principle trinitrofluorene (TNF) was potentially hazardous.

Zilog presidency

ZILOG President Federico Faggin, has been moved to Exxon Enterprises' board, assuming control of the parent company's new Computer Systems group.

Zilog vice-president Manuel Fernandez will take over the nominal presidency but will report directly to Faggin, who retains control over Zilog's future.

Zilog has denied any connection between the managerial changes and losses made by the company until earlier this year.

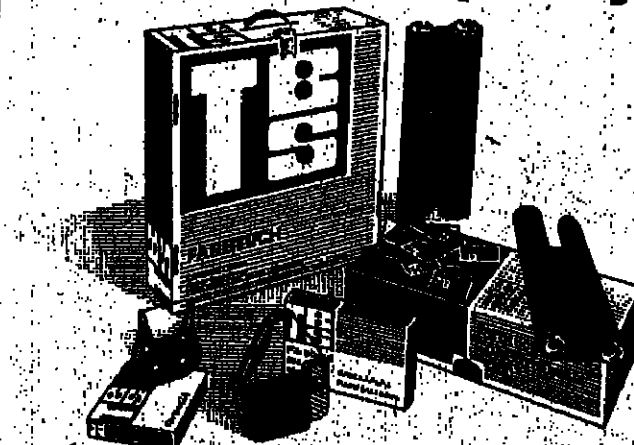
Phones for BBC

PVE Business Communications of Cambridge has announced a contract to supply the BBC with two computerised EBX8000 telephone exchanges. The contract is worth £2 million and the exchanges are scheduled for installation in BBC offices at Ealing and Shepherds Bush by mid-1982.

Fieth failure

A CASH shortage at point-of-sale supplier Fieth Ltd led to the liquidators being called in last Wednesday. Television owned 40% of company shares and have accepted a £600,000 write-off in relation to Fieth, whose assets along with 30 staff have been acquired by UCSL Microsystems, a Unilever subsidiary.

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Flexible leases warning

SERIOUS warnings about the risks for computer users who take out what are commonly referred to as "flexible leases" has come from the prestigious Law Society Gazette, the weekly newspaper read by the majority of solicitors.

Based on the experience of a solicitor who acted for a prospective flexible leasing customer, the Gazette article, in the November 12 edition, highlights the danger that arises when the early termination clause offered by the flexible lessor is separate from the main agreement with the ultimate lessor - the organisation that finances the lease.

Flexible leases enable a lessee to terminate a seven-year lease after three or four years, but only if he replaces it with a machine from the flexible lessor. Lessees are urged in the article to check that the minimum lease term on the second machine is stated in the main agreement, and that its lease rate is quoted in unambiguous terms.

The Gazette article points out that the company financing the lease has a seven-year lease which it considers to be binding, and that any request for cancellation will inevitably be met by the requirement to pay the balance of the outstanding rentals discounted at a market rate.

The article says that the lessee may be left in a difficult position dependent upon the flexible leasing company staying in business and honouring its obligations. If the flexible leasing company is wound up, the lessee will be left with a long-term obligation on the original machine.

It adds that even if the flexible option is exercised, the lessee will probably be committed to a second machine on financial terms which will be very disadvantageous.

The article concludes that unless flexible leasing companies "put their own house in order" legislation will be enacted to curb their activities.

The best known flexible lessor in the UK, Amicom Leasing, refused to comment on any of the points made in the article except to say that it "generalised" and was "directed at the seven or eight one-off deals in the flexible leasing business".

Type approval to go outside BT

THE power to approve or disapprove equipment for attachment to the telephone network, and also to license added-value services and the resale of transmission capacity, is to be given to the Secretary for Industry under the terms of the government's bill, just published, which sets up British Telecommunications as a separate body from the Post Office.

In practice, type approval is to be carried out by an independent body acting "in consultation" with BT, expected to be either the British Standards Institution or the British Electrical Approvals Board.

Under the Bill, which is expected to become law by next summer, British Telecom would have the right to maintain all PABXs and the first telephone instrument on any line, but is expected to subcontract much of this work to private industry.

BT has expressed keenness for getting into partnership with in-

dustry over this, especially concerning software-based systems.

The Industry Secretary would have power under the Bill to overrule the new corporation's decisions on maintainability of equipment and charges if he feels that "undue discrimination" is being exercised.

Competing

In announcing that BT would have power to raise private capital for its investment programme but not by share flotation, Industry Secretary Sir Keith Joseph said he was even more chary of private monopolies than public ones. Partnerships like those entered into by BP would probably be involved.

The Post Office is empowered under the Bill to provide electronic mail services that involve collection and delivery of hard copy. This could lead to BT and the Post Office providing competing services.

Amdahl launches H-series competitor

British Airways is already a major Amdahl user.

Paralleling to some extent IBM's other moves at the time of the 3081 launch, Amdahl has cut the purchase prices of 470 machines by around 15% and added a bottom end model to the 470 family. Called the 470V7C, it is a degraded 7B and offers a performance comparable with the IBM 3033S. It can be field upgraded right up to the V8 in the same way that a 3033S can end up as a 3033MP.

Commenting on the purchase

price cuts, Peter Williams said that Amdahl's lease/purchase ratio on 470s was still well over 20, much higher than the new ratios on the 303X family.

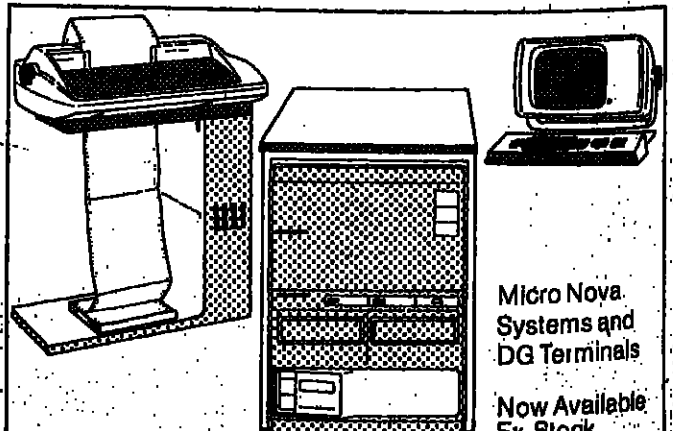
But Amdahl customers wanting to replace their 470s with 580s will have to wait until April 1982 for first deliveries. Shipments of the 3081 (erroneously called the 3801 in part of last week's story due to a printing error) will start before the end of 1981.

As with the 3081, the 580 incorporates componentry with a substantial improvement in circuit density. The Fujitsu mainframe-

ture logic devices in the 580 each incorporate about 40 gates, and 121 are held on one 14-layer board called a Multiple Chip Carrier, MCC.

Only eight MCCs are needed to make up the basic 580 machine and they are contained in a unit measuring only 5.6 cubic feet.

A 580 system can be expanded to a configuration with 32 megabytes of main memory and 34 I/O channels. In addition, the uniprocessor version can be upgraded to a multiprocessor machine with two processors sharing a common bus and the same operating system.



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Burroughs to lay off 335 staff

FALL in demand for document encoding equipment and some line printers has led Burroughs to announce plans to lay off 335 staff at its Cumbernauld plant in Scotland from next February. But the cuts are being offset in part by setting up a production line in Cumbernauld for the new B900 small business machine.

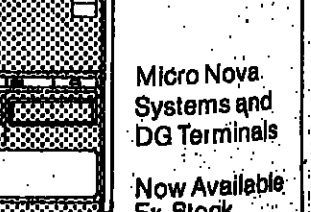
Research and development at Cumbernauld is not being reduced, and the company asserts that demand for the other products it manufactures in the UK such as floppy discs, terminals and business forms is expanding.

The encoders made at Cumbernauld are used mainly in banking for printing on to cheques; the line printers are the 9249 series.

The uniprocessor and the multiprocessor are designated the 5660 and 5680, respectively, the latter machine providing about 3.5 times the power of the V8 while costing less than £4 million.

As with the IBM 3081, the 580 employs 16K RAMs in main memory and intermixes special purpose RAM chips on the same boards as logic chips. They could be RAMs for registers, buffer storage or microcode.

With the 580, Amdahl has also announced what it describes as "a new class of firmware" called Macrocode.



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ALL-BRITISH SYSTEM TO GO LIVE FOR REAL TIME STOCKBROKING

World first in share dealing

by Kevin Cahill

THE first real time stockbroking service in the world will go live at Chebiche-based NMW next Monday. Called Capital, the system will provide real time processing including the production of share contracts for 35% of all UK-based Stock Exchange transactions.

Based on twin ICL 2972s, it has been designed around database management system IDMS and what is described as a unique version of ICL's transaction processing system called TPO 100, running under the VME/B operating system.

Record level

To obtain this throughput and to get the system operational required major changes to ICL's VME/B intercommunications with IDMS.

A joint ICL/NMW team has been working on the problem for a year and developed a record level journalising feature for IDMS which is now on general release.

The stockbroking system uses a dual database concept with the main database updated at night and daily transactions processed across an abstract of the database during the day.

Capital is intended to run eventually on a single database updated "on the fly" and with additional inquiry facilities.

Capital took four years to develop and cost £3 million, associated central hardware costing a further £3 million. The system completed parallel running into NMW client offices last Friday.

NMW is the only bureau supplying an online link to the Stock Exchange's Talamon system outside London.

All-inclusive

NMW managing director Brian Johnson explained that Capital's predecessor had been a mixture of real time input and updating with output such as share-dealing contracts provided every 30 minutes on a batch basis.

Capital would supply everything - input, ledger updating and do-

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JOHNSON: capital will supply everything in real time.

Puzzler for 'cross' winner

GOOD luck in a Computer Weekly crossword competition turned sour for winner David Yate when his home was broken into and his first prize stolen.

Yate, who works in the National Physical Laboratory computer division at Teddington, won a Commodore Pet donated by Master Resources for solving our first crossword last November.

Thieves broke into his Richmond home and stole the 8K pet with a television set and photographic equipment worth £1,000.

"They seemed to know exactly what they were after - high technology stuff. I don't suppose we'll get the cameras and television back, but the Pet won't be quite so easy to get rid of."

Yate is doubly keen to reclaim his microcomputer as the thieves missed his tape library, including Basic programs jointly composed with his son.

Should anyone offer you Commodore Pet serial no 1005079, contact Richmond Police on 01-940 9595.

Briefing

Thomson to shed 5,000

FRENCH telecommunications manufacturer Thomson CSF has begun a redundancy programme designed to shed 5,000 staff between now and 1983. Planning to avoid outright sackings if possible, it has offered voluntary redundancy payments of 15 months' salary which is expected to attract 2,000 volunteers, and has agreed premature retirement on 70% of pay for employees over 56.

It can run either in standalone mode or as part of a Datapoint. Attached Resource Computer environment where several machines and their shared peripheral devices are linked by a coaxial cable. In addition to multi-tasking and multi-programming RMS provides facilities like hierarchical user defined levels of security and what are said to be virtually unlimited file names.

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COMPUTERVIEW

THE Americans want to tell. The Scandinavians want to hear. The UK stands on the sidelines. The Japanese don't exist.

A slightly tongue-in-cheek summary perhaps, but one based on an analysis of the attendance figures at Infotech's State of the Art conference, in London last week.

Fifty-five per cent of the speakers, and none of the delegates, came from the US. Thirty-two per cent of the delegates and none of the speakers came from Scandinavia. Thirty-five per cent of the speakers and 20 per cent of the delegates came from the UK. There were no delegates or speakers from Japan.

The conference, which drew a record attendance of 500 delegates from 19 countries and produced revenue of about £250,000 for the organisers, proved if nothing else, that not all aspects of the international conference market are dead.

After that, some of the best-known names in the industry, speaking four at a time, though in separate rooms, each tried to give his version of the current state of the computer industry and the prospects for the next ten years.

Although Infotech had the conference conceptually divided into four streams - on

State of the art remains undefined

the optimistic basis that any organisations sending delegates would send four, each of whom would cover a separate stream - not many companies sent four delegates. In consequence most of them seemed to spend their time dashing from speaker to speaker.

There was great certainty, especially among the hardware technologists, about both the pace and kind of development we would see in the Eighties - one million circuit VLSI devices by 1982, big processors on a chip by the mid-Eighties.

But when it came to both the use for and social impact of these developments, no one was sure. It was as though the speed of development in the Seventies, and the current recession with all its hardships, had combined to exhaust and confuse those who, like Gordon Bell, had done so much to launch the industry.

Indeed, the first day laid the foundation

for this sense of confusion. Jim Feeney, in a mode which can only be described as confessional, rewashed all the dirty linen relating to MIS and what hadn't happened since computerised management information systems were going to solve all industry's problems in the 1970s.

Hamish Donaldson, a hard-bitten user if ever there was one, perhaps put his finger on the problem. He most of all knew what he wanted, an office without clerical staff, and he knew how he wanted it, with the files retained by the person who created, maintained and used them.

His requirement highlighted the potential for unemployment inherent in computerised systems. His method was in direct opposition to the database methodology of file handling which was definitely the flavour of the conference, among both the hardware and software specialists.

Given that there was no speaker from Japan, and relying only on after-speech conversations which clearly indicated that the majority of hardware predictions were based on Japan as the supplier, at least one half of the "state of the art" for the next ten years was missing.

What the Japanese might have said, had they been present, is hard to guess. But for those who heard Mr ACS from the Japanese Embassy speak at the BCS earlier this year, the short answer is, "a lot."

To be fair to Infotech, many of the potentially fascinating speakers working at the forefront of computer technology in Japan speak little or no English and the cost of providing simultaneous translation facilities for maybe two or three of them at last week's event would have been prohibitive.

On the other hand, all the papers at the IFIP conference in Tokyo in October were presented in English, and generally speaking the Japanese speakers were just as easy to understand as their counterparts from Continental Europe.

Perhaps it is time that Infotech (or one of its competitors) did some serious talent scouting in Japan with the aim of putting on some kind of all-Japanese event in London.

LETTERS to the EDITOR

Basic still has much to offer

WITHOUT wishing to prolong discussion about the pros and cons of Pascal and Basic, I think David Barron (CW, November 6) may have misunderstood the point I was seeking to establish.

Pascal is a good "structured" language with many flexible features and has proved highly influential in developing languages like Ada; however, I do not think it will replace Basic as a popular language for the development of systems on minis and micros.

Any organisation choosing a programming language looks for four main characteristics. They involve language features enabling the planner system to be developed, training courses, active support in the language by manufacturers and a pool of trained personnel to initiate the systems.

Pascal meets the first two criteria but does not receive active support from most mini and micro manufacturers. Also, there are few Pascal programmers compared to Basic.

There is low demand for Pascal programmers, a fact made clear by scanning appointments pages in the computer Press.

Only a brave organisation would choose Pascal when there are only limited possibilities of finding trained staff. I feel this militates against Pascal gaining wider acceptance.

On the other hand, Basic has active support and trained staff are available. Basic does suffer disadvantages vis-a-vis Pascal in many respects, the most obvious defect being lack of ready comprehension.

BIS's Structured Basic preprocessor, which implements DOWHILE, IF-ELSE-ENDIF,

Speed of light

THE computer devised by Bernard de Neumann - an array of processors transmitting information to each other using beams of light (CW, November 13), has an interesting potential, unmentioned in your report, which uses beams of light for data storage as well as information transmission.

Consider de Neumann's A and B processors separated by a 300m optical path. Light will travel between them in one microsecond.

When switching speeds reach one picosecond, a medium-term possibility envisaged in your pages, it will be feasible to have up to one megabit of information moving from A to B and another in the opposite direction.

The two processors can store two megabits of information in the intervening space by retransmitting their received information.

Even at today's slower switching speeds, large amounts of information could be stored on light beams in outer space.

G. BEACON

Fleetham, York.

Unix users widen their horizons

WITH reference to your recent special Software File on Unix, I should point out that Unix is in use outside the US, and that other Unix user groups exist (Canada, Australia and ourselves in Europe). As you correctly point out, Unix is at present most heavily used in academic circles, but this has arisen due to Bell's (Western Electric's) unusually favourable licensing terms and not because "the academics don't really want the outside world to know."

The European Unix User Group has recently decided to widen its horizons and to become a Unix and Unix-like systems user group. In this much wider context the lack of standardisation can give rise to great problems in software portability, and we are currently looking at this problem. Equally important to moving software around is the problem of moving personnel and we hope to give

some guidelines as to the type and form of user interface that we would like to see. The Unix-like system vendors approached have been most receptive.

The user group itself has recently generated a distribution of Unix V7 for small (non-separate instruction and data space) PDP-11s, since Bell does not support them any longer and this has been given with equal favour to academic and commercial sites.

I mention these items in an attempt to show that the European group, at least, is keen to encourage both types of members and would not wish to see the divisions that are occurring in the USA.

The active academic community has much to gain from interaction with the outside world and, I believe, has much to offer in return.

ALAN MASON

Chairman

European Unix User Group.

Woolwich system works

THE paragraph that describes the Woolwich system (Building Societies article, CW, October 28) implies that the pilot scheme in early 1979 suffered so much from the Post Office disputes that we are not going to implement anything more until the early part of 1981.

For the record, we have 26 branches currently operational and we shall complete the remaining branches by the end of March.

P. J. REEKS

Asst. General Manager (DI)

Woolwich Equitable Building Society.

I shall acknowledge any material useful in my work, but brief marketing documents are unlikely to prove useful.

Dr PETER J. L. WALLIS

Lecturer in Computing

School of Mathematics,

University of Bath,

Claverton Down,

Bath BA2 7AY.

I AM currently writing a book on Portable Programming and have received the suggestion that it could refer usefully to contemporary software products.

If any of your readers have details of such products I would be glad to hear from them. Both background and detailed information on portability would be useful.

I may be contacted by phone on

Cork is the Apple of their eye

WITH the opening of Apple Computer's Cork plant, the city has been declared a prime location for future computer industry developments by the Irish Industrial Development Authority.

Managing director of the authority Padraic White said that Cork was on the verge of rapid computer expansion, and talks about providing employment openings had begun with University College, Cork and the Regional Technical College.

IDA's rapid success recently in persuading major companies to invest in Ireland has been confirmed. Information gleaned at the Apple opening ceremony indicates

that at least one other big US concern will follow Nashua Corp which will develop a £15m plant on the outskirts of Cork City.

A microelectronics research centre has been established at University College, Cork, while the National Institute for Higher Education in Limerick has established a centre to investigate integrated circuits in computer technology.

Both projects have Irish government backing and Dublin is also conducting a major study of microelectronics implications for the Irish economy through its State research agencies.

Temple Engineering Sales has been appointed sole Irish distributor of computer terminal cables, by

Fabrica Milanese Conduttori of Milan with a range including coaxial, twinaxial and multi-conductor cables.

Ireland exported £1.5m worth of computer systems to the UK in June compared to £0.75m worth in June, 1979.

Exports to the UK for January-June 1980 totalled just over £1m, putting Ireland in second place to the US, which for the same period exported a massive £35.8m worth of equipment to the UK.

American peripheral manufacturer, Dataproducts Corp started work on its new 200,000 sq ft extension in Dublin recently.

However the programme manager, Hans Brune, states it is accepted that some equipment will have to be imported.

To alleviate the shortage of trained staff, a chair in office automation studies has been established at Carleton University, Ottawa, with \$300,000 funding from two local firms, Mitel and Systemhouse. Member companies of the Canadian Advanced Technology Association are also funding a study on how they can co-operate in a joint approach to office automation.

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PANORAMIC view of historic Cork, whose present and future are enmeshed with high-level computer technology.

Fire hits systems show

A DISASTROUS fire at one of the world's largest fires in Las Vegas brought a sad end to proceedings at nearby Comdex 80, the major US show for OEMs, systems houses and distributors. On the final day, half of the exhibition hall used for the show was converted into an emergency centre for evacuees. Over 100 died in the blaze.

The first four days of the show, however, seemed to leave most exhibitors well pleased with the business transacted. A common observation was that most visitors were seriously interested in buying, rather than merely gathering information.

There were more than 350 exhibitors but little radically new hardware on show. As one vendor euphemistically put it "The accent is on professionalism this year, rather than on novelty."

Software houses took 30 of the stands, and were mostly specialists in the microcomputer area, though a few firms including MCBA are well known in the mini world. Two British firms, CAP-CPP and Micro Focus, had stands, as did Graham Dorian, owned by GDSS.

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1984 and all that

THIS week's example of the strange things people say in the media about computers was sent in by Francis Chambers of Westport, Co. Mayo, who writes:

The East Cork town of Carrigrohilla is to have a new £15m industry with a projected employment of 600 workers. It was announced yesterday by the Minister for Labour Mr. Frank Fitzgerald.

The new industry of the United States is to be a manufacturing plant which is used for the storage of radiation in the computer and data processing industries.

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, but not necessarily for publication.

BELGIUM has become the sixth country to buy British Telecom's Prestel videodata system, with a contract signed by Bell Telephone Manufacturing Company, the leading Belgian telecommunications equipment supplier.

Bell has bought a GBC 4085 on which to base a videodata bureau to enable companies to run pilot trials for in-house videodata systems. The company also has a licence to supply Prestel-based systems in Belgium.

GILB'S MYTHODOLOGY

Seek simpler solutions by defining real needs

ONE factoring company, clients of ours, wanted a new system designed with a stipulation from the financial director that Cobol be used. We felt that this requirement conflicted with our ability to satisfy the even more important consideration, of lower unit costs per transaction.

Our approach envisaged a major architectural strategy of using minicomputers, and Cobol was not a major or efficient language on minis at that time.

Our clients reasoned that, if the "mini" architecture did not work out satisfactorily, they could move the new system back to the large-scale computers they were accustomed to using on a service bureau basis.

In other words, they wanted a safety line, or a retreat possibility. They did not really care about Cobol; they wanted peace of mind.

Even more important, they wanted low costs in the new system. This was the primary element needed for profitability and competitiveness.

We calculated roughly, that using Cobol would double costs compared to Basic or Fortran. This is not a general assertion about the languages but seemed to be the case with minis at this time.

We requested and received agreement to reformulation of the client's needs, and agreed to design and build the system so that it was 98% portable, whatever the machines we ultimately used, to large-scale IBM machines.

In other words, a maximum 2% additional cost would be necessary for converting the programs to larger-scale machines. Briefly, even if real costs were not so optimistic, there would be no insurmountable practical barrier to conversion.

We were not adamant about this. We judged the probability of needing conversion to be very low, but avoided having Cobol costs imposed on us. The penalty was that we had to specify a restricted, "portable" use of the programming language we chose finally.

Insurance

A large Nordic life insurance company was dissatisfied with the ease of maintenance and operational cost level of its entire life insurance system. Its basic plan called for a complete redevelopment of life insurance computerised systems, a project clearly involving many hundreds of work years.

The director of data processing was concerned about the size of the planned project. We made a concerted effort to identify the highest priority needs, and several points emerged.

They were to reduce cost level by at least 4%, improve substantially the ability to implement changes and improvements in the system, and cut the time factor between data birth (with salesmen and clients) and when the computerised system knew about this new data. Instead of a fortnight, the clients would have liked to see the operation done in three days or less.

One obvious way to approach these goals was to redesign and reprogram the entire life insurance system. It might take three to ten

years, and 100 and more DP specialists to do this, but the clients were considering this reluctantly as the only viable way.

Once we started concentrating on looking for evolutionary steps to achieve these goals, a number of short-term strategies emerged which would begin to move the insurance company in the right direction, without the burden of tremendous and uncertain revolutionary developments.

An initial specific strategy was the use of INSPECTION (Fagan/IBM quality control of all changes and extensions) which was given substantial productivity (cost) and quality improvements in large maintenance environments.

We identified the use of deep database audit programs for improving maintenance effectiveness and reliability by means of automation as another possibility.

Message

The initial attractiveness of both these solutions was that they gave known results in the right direction without the necessity of changing currently used applications.

We identified additional attractive change paths in a more extensive study such as using online



Tom Gilb is an independent consultant, lecturer and author on computing topics.

microcomputers at salesman level to capture data at customer homes and in sales offices. These would replace present handwritten forms which caused much of the presently experienced delay and cost. Again the attraction of this was that we could add it to the present system without having to change the automated system.

In this short example I cannot identify all the "real" goals that we identified, or all the simplified solutions compared to doing the whole system over.

The message here is that in the eyes of this company we found a large number of "simpler" solutions by identifying their "real" needs clearly. The next stage was to look for a series of ways to move in the direction of achieving those goals.

Gilb's Hypothesis: If your solution seems to be too complicated, look for simpler approaches by first asking: What are our real needs. This will allow you to find a simpler set of solutions to your problem.

Downtime

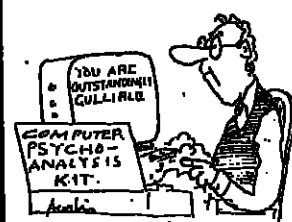
by Chad

Music hath chips?

TOM CARPENTER of Guernsey wrote to the Daily Another Newspaper suggesting that "in this age of microchips it is possible to banish the chap waving his arms about in front of the orchestra."

Continued Carpenter: "All that is required is a set of small coloured lights on each musician. These would be governed by a cassette programmed by the arm-waver in the comfort of his study. Each instrumentalist would soon learn to co-ordinate the individual flickering, waxing and waning lights with the score."

What Carpenter's proposal is intended to achieve I am not quite sure. In these days of cuts in the arts budget it would be nice to save the conductor's fee.



but in this case that does not happen because he has to do the conducting at home anyway.

Repeat performances are saved, I suppose, and his travelling expenses, but surely there is much more scope for economy on the shop floor, so to speak?

There was a well-known study of a symphony orchestra by an efficiency expert, who recommended that since the English horn player and the harpist had little to do, their parts should be combined. He also suggested that the slow movements should be speeded up, thereby getting the work done in much less time.

Carpenter's idea is unusual in that it gets rid of management rather than workers, something not very popular with managers. It raises the prospect of a shop floor revolution.

What would happen if the players all decided to ignore the flashing lights and put their rumbling noise in a marmoset and pizzicato in a marmoset? Since Sir Thomas Beecham is already spinning in his grave like a propeller shaft, I suppose the rumbling noise in the Royal Albert Hall would just get a bit worse.

It seems to me that the real potential for microchips would be in rendering the process of music making not quite so enormously difficult as it is now. I have spent many years struggling to learn to play the piano, and the process of translating the dots on the paper into positions of the fingers in real time seems positively complicated (mainly because I've never been able to do it).

It seems to me it should be possible to devise a mechanism that would handle the digital side of playing a piano, say, while leaving the analogue side (the artistic interpretation, don't you know?) to the human. The machine would read the notes and set itself up ready to play each chord, and then play it when you pressed a single button, thus saving you having to multiprocess several fingers at once. How hard you press the button determines the loudness.

My musical friends are horrified at the idea. But why should the arts fall behind in the March of Progress?

INFOTECH STATE OF THE ART REVIEW

Integrated office with a difference

WAITING for a big firm to produce a true integrated office automation system is like waiting for Godot - it will never happen.

That was the opinion voiced at Infotech's State of the Art Review by John Ellenby, president of Grid Systems of Silicon Valley, and it is hardly surprising.

Ellenby has just started his company to produce an integrated office which he claims will have "unique characteristics".

Ellenby was at Xerox Palo Alto Research Centre until last January supervising development of the Alto personal computer; he has enlisted no less a figure than Gene Amdahl to his board of directors. Grid Systems has \$2½ million backing from New York bank Citicorp.

The company still has only eight staff but they include established brains from Xerox, Apple and Computer Sciences.

Due to be unveiled in nine months' time, the office system is intended specifically for managerial use but expatriate Englishman Ellenby is cagey about what it will comprise.

He has been influenced considerably both in a positive and negative sense by his years at PARC. Big companies like Xerox and IBM are ill-equipped to take advantage of VLSI because of business decision-making difficulties, he claims.

Ellenby says that cost-justifying the huge commitments and risks involved if a large company wants to move this way is just not possible.

He considers that it is impractical to get all the different divisions to agree on features and currently elaborate market research procedures tend to reduce the size of the apparent market because of fragmentation.

Ellenby points out that informal use of office equipment is far more important than formal applications, taking the example of the Xerox copier.

All the companies offering "integrated office systems" at present are minicomputer suppliers, promising an interesting comparison when Ellenby's version appears on the market.

Doubts on ICL chances of survival

ICL is less likely to survive in the information technology industry of the future than the two other European-based mainframe manufacturers, Siemens and CII-Honeywell Bull.

This was one of the predictions made by consultant Phil Dorn in a paper on the future structure of the industry presented at last week's Infotech State of the Art Review in London.

Dorn outlined a profile of the model company with all the characteristics for survival, putting a strong emphasis on communications and office technology capability.

According to Dorn, its activities should include supplying both voice and data communications kit and the operation of unregulated network services.

There should also be a research division specialising in advanced communications methods. Image technology expertise and the

supply of shared logic word processors are key factors in the office systems area.

Dorn also saw State support for R&D and a protected home market as important prerequisites for survival, thereby eliminating the UK as the base for a computer company assured of survival.

While Siemens and CII-HB were ranked by Dorn as "sure bets" to survive, ICL was given only a "fair" chance.

Apart from IBM the "sure bet" group also includes the Japanese leaders, Fujitsu, Hitachi and NEC, and three organisations strongest at the moment in the communications and office fields - Xerox, Northern Telecom and the US telecom giant, AT&T.

Size is seen by Dorn as another critical factor, which is why he saw relatively small companies like Wang, Datapoint, Prime and Nixdorf as having problems, despite their effectiveness.

IBM goes into Expert Systems

IBM is getting into Expert Systems, with a joint research project with Artificial Intelligence researchers at Stanford University who are working on a system to diagnose faults in computers.

Announcing this at Infotech's Review, Edward Feigenbaum, of Stanford, suggested that one of the biggest potential application areas for Expert Systems was in making up for acute shortages in electronics technicians.

Expert Systems are those which provide advice on incompletely understood areas of knowledge, based on rules fed in by human experts.

Some spectacular successes have been made by Expert Systems recently, he said, specifically in solving problems of diagnosis in internal medicine and molecular genetics.

The Internist medical diagnostic program had been successful in solving a large set of theoretical problems including one in renal

cancer that, it was felt, only one in 10,000 general physicians would be able to answer. The problem included plenty of misleading symptoms.

A genetics engineering firm in San Francisco, Genentech, was using his Molgen program intensively in research to produce the anti-cancer drug Interferon, Feigenbaum said, adding that he has set up his own firm to market the software commercially.

The project with IBM involves a 4331 connected locally to a System 1 mini and remotely to a 370/158. It is system failures rather than chip failures that are being traced, usually to faults in communications links or operating system software.

Looking to the future, Feigenbaum saw Expert Systems being used to solve the problems of VLSI design, where the combinatorial problems were far too great either for human beings or conventional computing. He is already exploring this area in conjunction with Xerox PARC and Fairchild.

The biggest single market, however, is in the home, Feigenbaum feels, seeing Expert Systems used in games and also in giving advice on problems such as care of plants and how to invest.

One area of expertise in which Feigenbaum has been totally unsuccessful in recruiting human experts to co-operate is that of economics and management. His colleagues in these fields at Stanford are quite candid in telling him, he says, that no-one really understands the problems. These areas are still "Black Magic".

Hardware aspects

GORDON Bell, vice-president of Engineering Development at DEC, concentrated naturally on "state of the art" hardware aspects in his introduction. "A fifth-generation computer can be fabricated on a Very Large Scale Integrated circuit."

Bell predicted that lower cost and increased use would disperse computers in a manner analogous to the ubiquitous fractional horsepower motor.

He saw distributed processing, connecting up all these dispersed computers, as the key to the industry's development over the next decade.

More news from the Infotech Review is on page 6. See "Europe attack on sales ethics".



FEENEY: "MIS a laudable aim which has been achieved by very few companies."



DONALDSON: "Many management clinging to technical fascination of large machines."



BELL: "A fifth-generation computer can be fabricated on a Very Large Scale Integrated Circuit."

Merchant banker predicts files - but no clerks

HILL Samuel merchant bank director Hanish Donaldson defined his systems objective as dispensing with clerical staff in the business.

By following the rules developed at Hill Samuel, a series of guidelines had been established in relation to file handling.

Files should be held close to the sections responsible for accuracy, requiring fastest response, point of origin and where they are used most frequently.

Working under those guidelines and predicting a sharp fall in processor costs, Donaldson observed that future development should help "to consider realistically a processor per application per location."

He foresaw resistance from "many management services departments who are clinging to the technical fascination of large machines and host-centred networks."

Feeney described MIS as "a now largely discredited term for a laudable aim which has been achieved by very few companies. The irrelevance of the results and, in many cases, the sheer destruction

of the programmes undertaken in pursuit of MIS have led to its general abandonment as a goal for the industry."

He blamed a variety of causes for the failure, including data management some main files became one master file, transactions accumulated a multiplicity of sort keys, run times for productive work doubled or more, and a number of companies went bankrupt during this phase.

Programmers were seen as the enemies of progress by MIS practitioners - in some ways correctly - since programming was and remains the bottleneck.

Feeney demonstrated the contradiction between the constantly-rising performance claims from hardware manufacturers during this period and corresponding failure of the systems to deliver end-user benefits on the scale expected.

Summarising his points, Feeney saw the way forward to lie via distributed processing.

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Benefits

Manufacturers would seize on the creation of excellence centres if only to make use of them as potential customer reference installations. Whether the DP management teams involved would show the same levels of enthusiasm in face of mass invasion and "notoriety" is far from certain.

This might be countered if the award carried substantial benefits, such as unlimited speaking engagements at all On-Line Conferences in venues like Hawaii, Brazil or Mexico, or granted honorary membership of the BCS, BHM, NCC, and the IBM user group.

Before seals of excellence are awarded, some guidelines must be established. Even the BBC finds difficulty in developing an acceptable system of monitoring success in terms of research and study output. The Commission has established a "think tank" known as FAST (Forecasting and Assessment in the field of Science and Technology) led by six Commu-

Selection

First item on the forum's agenda will be to establish selection criteria. Selecting Centres of Excellence will need more than a letter of recommendation from equipment suppliers or the company managing director. Nominations will have to come from independent sources, with a heavy leaning on fellow DPMS, consultants - and possibly computer journal editors.

Methodology established, the next stage must involve deciding specifications. Should the Centres of Excellence include small-scale minicomputer installations operating with minimal resources, a critical real time distribution warehouse system, or large multi-mixed configurations operating on three-shift seven-day week routines? Perhaps cost/performance criteria should be the determinant, or output measured in terms of available resources?

The end user should have a strong say in the selection process, as should the privacy group of the National Council of Civil Liberties.

These awards may stimulate the computer industry, especially if Centres of Excellence are indicated in the Computer Users' Year Book with a star or rosette. As computing is much involved in tabulation and classification, the DP Centres of Excellence scheme may have a promising future.

Fierce attack on sales ethics

A FIERCE attack on the attitudes of management in big computer companies and on the techniques of computer salesmen was made last week by Brian O'Heron, former systems and technical support chief at ICL.

Speaking at the Infotech State of the Art Review in London O'Heron deliberately avoided the subject he was billed to discuss, the problems of achieving user oriented systems. Instead he chose to highlight what he considered to be the real reasons that users so often end up with systems that fail to meet their original requirements.

O'Heron asserted that the main concern of computer salesmen was to hide the truth about their product rather than inform the customer. He singled out high commission related quotas resulting from the rapid growth of the computer industry as the force driving them to make a quick sale regardless of user satisfaction.

According to O'Heron, the only way this rapid growth could be

slowed down was for customers to refuse when subjected to sales pressures, even if a negative response proved more difficult than agreeing to buy.

Turning his attention to managerial attitudes, O'Heron said that directors of large firms were too occupied with company politics to worry about customers or the work of those below them in the organisation.

O'Heron told how he had been prevented, during his executive days in a large company, from motivating fully the people for whom he had responsibility.

Illustrating his argument about company politics, O'Heron described how a group of ICL managers tried to "kill" a project to manufacture a particular design of printer because they had favoured another design that had been rejected earlier.

O'Heron directed the ICL 2900 development programme from 1970 onwards but returned to his native US as president of Grundy Terminals of San Diego.



BRIAN O'HERON (right) launched a fierce attack on both managerial attitudes and sales techniques at Infotech, singling out office politics and high-pressure sales methods as his principal targets.

Cheaper by package

SOFTWARE packages are cheaper than home-grown systems and help to break the programmer bottleneck. Informatics vice-president James P. Porter told the National Shareholders Management Symposium in Minneapolis.

He quoted a program costing five times more to develop in-house than to purchase as a standard package. "It would take 18 months to develop and implement, as opposed to six months for the package."

Speaking of revenues from each product, he forecast that by 1985 packages would be earning \$5 billion a year, almost twice as much as custom products at that time.

"Users are beginning to see the benefits of using available and standardised packages where the development costs are spread over a larger base and personnel costs can be held more constant."

"Today more than half a million people are classified as programmers."

"As demand for these people is growing at 20 per cent a year, until the shortage eases, the range of standard packages available should be seriously considered."

Companies with non-standard needs would find implementation systems could help produce applications software more quickly.

Open University puts 'remote blackboard' under student test

THE Open University will evaluate student response to the "remote blackboard" facility of its Cyclops teaching terminal system under a two-year study contract with British Telecom.

The blackboard allows users to write or draw on the Cyclops screen or on an attached graphics tablet in a similar way to the Teletext device developed by the French research centre CCETT for the French government's telematique programme.

Evaluation is being helped by Argon International, which assisted in developing the Cyclops terminal and is marketing the product internationally.

For trial purposes, a tutor will be linked to groups of students by

a conference telephone call. Each participant will be able to address another and draw on all the screens. Pre-recorded cassettes can also be used.

Cyclops is designed to display colour graphics to a resolution of 320 by 240 picture points, although monochrome will be used in the trial.

It is also compatible with Prestel and Argon's IVS-3 videotext systems for displaying alphanumeric characters and mosaic graphics.

With two additional character sets and a geometric graphic coding scheme like the Canadian Telenet system, Cyclops also has a run-length encoded graphics mode for reproducing photographic images like Picture Prestel.

AT&T joins list of survey 'pioneers'

AMERICAN telecommunications giant AT&T is among the first subscribers to a UK residential market study for teletext and videotext being conducted by London-based consultancy Communications Studies and Planning.

Eastern Counties Newspapers is another initial study subscriber and is collaborating with CS&P by providing information on use of its Prestel database.

Individual subscription fees are £5,000, or £18,000 on a group basis, allowing reproduction within an association. Four or five more subscribers are needed to make the project break even.

Based on users' diaries and interviews conducted with them, the first report in the three-stage study deals with teletext reactions. It is due for completion before the end of the year.

For videotext reactions, CS&P is waiting until 400 genuine residential users are registered on Prestel. Most of those now registered as residential are new videotext industry members with additional home terminals.

AES and Wordplex split up

THE marriage between two of the world's principal suppliers of word processors, both Canadian owned, is over. AES and Wordplex are being split apart by their parent company, the Canada Development Corp, only two years after they were bought up entirely and merged (CW, August 3, 1980).

AES will continue to operate from Canada but control of Wordplex will be transferred to London where Harry Mallinson, managing director of Wordplex in the UK before the merger, is to become international president.

Wordplex sales offices are to be opened in the US in an effort to improve the company's hitherto poor penetration there. The former distributors, Lanier, have concentrated on selling AES machines.

Jerry Billee, vice-president of the Canada Development Corp, said that the split was intended to "increase the market penetration" of both companies.

It was originally thought that the two product lines were compatible, but difficulties in trying to sell both with the same sales force led to the marketing forces being split, and a total separation has been predicted for some time (CW, July 10).

Growing market

THE UK small business systems market will increase seven times over in terms of numbers of units in the next five years, according to a survey from May Report, an ECC publication. The total value of systems under £25,000 sold annually will increase from £100 million in 1975 to about £800 million in 1985.

Six satellites on order

SIX satellites worth \$180 million are to be ordered by Immarast, the international maritime satellite organisation, from the European Space Agency, Intelsat and Comsat General to cover maritime communications in the Atlantic, Pacific and Indian oceans. They are to be delivered between 1982 and 1989.

The PTTs of 30 countries are signatories to the one-year-old Immarast operating agreement, with the US holding 23.4% of the shares, Russia 14.3% and the UK 9.2%. Plans were laid for the service by the United Nations in 1973.

South Africa expands

BOOSTED by the threat of sanctions, the electronics industry in South Africa is expanding and will be able to manufacture medium sized mainframes within two years.

This is the opinion of Abie Van der Berg, chairman of South Africa's Industrial Development Council.

"The local electronics industry, spurred along initially by the Post Office and this organisation, is further along the road to self-sufficiency than most people realise," said Van der Berg.

An illustration of the country's development is the terminal manufactured by Mercedes Datskor.

SOFTWARE FILE

Crash course in pitfalls from ICL

IF you haven't time to study economics or accounting, a morning spent at Balance the Alternatives, ICL Datskil's financial planning service, might prove a valuable substitute.

Datskil appears at "Alternatives" in the guise of business consultant as well as in the more familiar role of ICL software house. Its successful financial modelling package Prosper is the tool in a wide-ranging examination of the financial roundabouts and swings which can make or break a company.

Financial and modelling packages have provided boom sales for the software industry in the past year, partly as a consequence of the recession which has forced companies to examine their use of financial resources more critically than ever before.

The pitfall in using such a tool is the one inherent in the use of all statistics — one has to know the right questions to ask in order to get a realistic and helpful response from the system.

Balance the Alternatives is a crash course in pitfalls — how to identify them and how to put avoiding action into effect.

Independent consultant Geoff Smith demonstrates the importance of keeping a balance between the various elements of cash flow: money used and cash required, liquidity and productivity, sales,



SMITH... some eye-opening figures.

prices, volume of business, costs and profits, pay increases and employee relations.

His theories are then put to the test using Prosper, which generates business plans linking those key factors, and shows in stark detail how gaining money on the swings can lead to such losses on the roundabouts that the whole playground goes out of business.

Repercussions

Prosper allows a detailed study of the effects which stem from such actions as putting up prices or cutting the workforce, with all the repercussions on income, profit, and productivity, clearly shown through comparative columns of figures.

Concentrating on "added value" and the profit per £ of capital, Smith uses the concept of balance between the ratios to extrapolate some eye-opening figures from the published accounts of (unnamed) major companies.

A manager trying to put his own business on an even keel, or discover the reason for a competitor's success, could do so on a terminal in the privacy of his office, without privileged information. The system is easy to master, and a business plan can be produced in half an hour using only the published reports, once the various ratios of profit and loss are understood.

Helping builders to give accurate estimates

CONSTRUCTION firms throughout Europe are being wooed by Estimation Ltd with a system that aims to give users an accurate quotation of job costs without involving them in programming and file maintenance.

It was developed in the US by Estimation Inc to speed what is often the builder's most laborious job, estimating, and is said by managing director David Summerfield to cut the time spent on this activity by 75%.

The British company was set up in Solihull nine months ago to take the US system and put it on the European market. Essentially, it prices labour and materials.

The system runs on an LS2000 which was specially built for the application, is based on two 280 chips and runs under CP/M.

There are three standard systems present, for electrical, mechanical and ducting work. Development manager Chris Wall said the system was designed to prompt the user at all the time.

There are about 30 programs for each system and they are all written in BASIC-2.

Estimation is menu-driven. It also has a special two-part keyboard. One part is a numeric pad which can also be used as a calculator.

lators, and the other has 40 keys to which the user assigns functions.

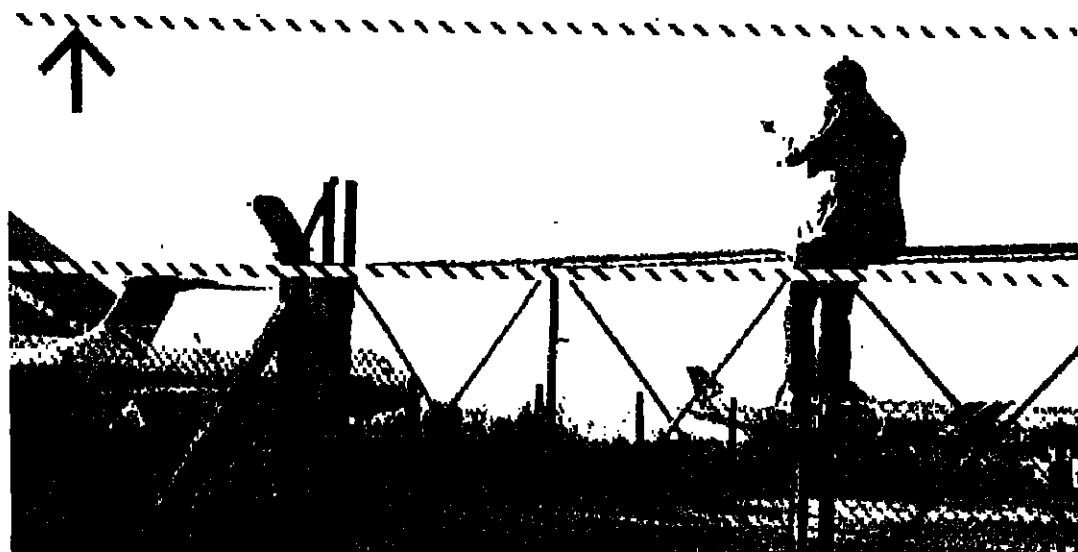
Estimation Ltd, which is owned by a large Midlands construction firm, has European licensing rights. There are currently 11 UK users and the company has an order from Denmark. In the US, the system has 1,000 users.

The system is selling at £8,150 for the hardware (including a Texas Instruments 820 KSR printer) plus £1,300 for the mechanical suite, £900 for the electrical suite and £900 for the ducting suite.

Zeus City order

SOFTWARE house Zeus Hermes has won the biggest contract in its 11-year history. The contract is for enhancements to the Foreign Exchange in-branch system for National Westminster's London-based World Money Centre, and is worth over £500,000. The system will provide dealers with up-to-date exchange rate information and will facilitate calculations affected by their constant fluctuations. Scheduled to go live in 1982 on dual General Automation 16470s, the system will draw on Zeus-Hermes' specialist experience in real time banking applications.

by Claire Gooding



MICRO software specialist Southdata is launching a vision system aimed at solving security problems. Vision-80 is a package consisting of one or two hardware boards and a set of programs carrying out processing on a standard industrial TV camera picture.

The system looks for movement in the picture, classifying the moving object by size, speed and direction. If it falls into a pre-defined "sensitive" category, the movement is reported and appropriate action taken. This might involve setting off an alarm if the system is used as a security watchdog or incrementing a counter if it is being used to monitor queues.

As false alarms are the great plague of automatic security systems, the software deals with an exact definition of "illegal" movements. Exceptions are entered by parameter enabling anything smaller/larger, shorter/taller, wider/narrower than the object defined to be ignored.

Criteria can also be set for the exact area of movement, speed and direction.

The system could operate a traffic census by registering the number of vehicles larger than a given size and moving at a particular speed on any place of road.

In the picture, Vision-80 would ignore the area outside striped lines, and anything such as clouds or birds moving within them, but the man carrying the gun would set off an alarm since, reduced to a two-dimensional pattern, he would enter the pre-set "illegal object" category.

The prototype is a standard Z80 micro running under CP/M using about 8K bytes of RAM.

The IBM display for non-IBM computers.

IBM have just produced a new VDU that will connect to most computers. Because it's ASCII Teletype compatible.

The first thing you'll note about it is the startlingly crisp definition of its screen.

It should also please everyone using the VDU, because the screen tilts and swivels for comfortable viewing.

There are dished keys for fast touch-typing; in fact the excellence of the whole keyboard design is a direct result of IBM's type-writer skills.

Not only is the terminal easy to use—but it's easy to set up. Less than 30 minutes from unpacking to running.

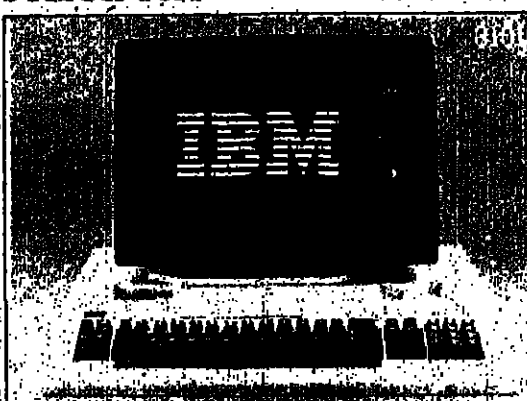
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Software 1980

£1 million compensation report 'storm in a teacup'

REPORTS that ICL paid Oxford University over £1 million to compensate for its 2980 system 'failure' have been described by the company as "rubbish" and as "a storm in a teacup" by Oxford University's Computing Service department.

The first report appeared in the Oxford Mail on November 25 and was picked up by The Times and Daily Telegraph a day later.

ICL has admitted that the Oxford contract was renegotiated in the summer of 1978, a year after the 2980 was installed.

Extra items

Oxford University said that ICL had supplied some extra hardware, including disc stores and memory and some "extra items" of software. These additions amounted to far less than £1 million, according to the University.

The Department of Education

Unions put plan to delay ICL redundancies

DETAILS have emerged of proposals put to ICL management by union leaders representing 2,500 Winsford plant and other workers who are threatened with redundancy.

At a meeting of the two sides last week, the unions - AS/TMS, APEX, AUEW/TASS, ESSA and ACTSS - called for the redundancies to be reconsidered or at least delayed.

ICL responded with what one union official called "bewilderment" and announced that it was starting the 90-day consulta-

tion process with the unions from November 17.

At the end of this period, and if it is unable to redeploy the threatened workers, ICL will issue redundancy notices, followed by the normal 90-day notice period before affected employees leave.

The main points of the joint union proposal are:

- "That the manpower proposals are withdrawn until end-of-year results are available and full details of ICL's five-year plan have been given to the unions; scruti-

'A Laker needed to break PO monopoly'

FRUSTRATION was in evidence at the annual conference of the Telecommunications Managers' Association, held last week in Coventry.

Keynote speaker J. E. Sampson, director of telecommunications at Standard Telephones and Cables, called for a full-scale easing of the British Telecom monopoly.

The proposed government solution, of leaving the policy decisions to the Minister of State, was more of a political pass than a practical solution, said Sampson.

Involve private sector - Minister

A GOVERNMENT Minister told the Telecommunications Managers' Association in Coventry last week that the resources of the private sector must be fully mobilised to create and use the opportunities that new technology gave.

The Minister of State for Industry, Adam Butler, said the government's new Post Office Bill was designed to make the telecoms industry more efficient.

The Bill, if passed, would split the Post Office into separate postal and telecoms corporations and would make it easier for private kit to be connected to

British Telecoms equipment.

Butler said: "The Bill would give the Secretary of State the power to license alternative network systems, and we are anxious that private manufacturers should be given every encouragement to make use of this new 'information agreement'."

"The government will continue to give selective financial support and we shall seek to establish favourable trading opportunities for our manufacturers."

Butler suggested that industry needed to familiarise the next

generation of workers with data processing, and this should start at junior school level.

He also paid tribute to some of the UK's achievements in telecoms, which he said put it ahead of most of Europe. These were:

1. 100,000 telex sets in use - the highest number in the world;
2. Over 1,500 micros in use in secondary schools;
3. 6,000 Prestel sets in use;
4. ICL's CAPS, which he said was a world leader;
5. Fibre optics.

reduction of sub-contracting work as part of a general policy.

- "The company should examine the feasibility of the closure of the satellite factories to bring the personnel and work to Winsford."

According to the unions, such measures would do much to ease the problems faced by ICL and get the backing of most trade unionists in the company.

An ICL spokesman said: "We will be meeting the unions on December 12 to give our answer to their proposals."

"These include applying temporary short-term working compensation, shorter working week, redeployment, retraining, other forms of government assistance,



BUTLER... "Power to license alternative network systems."

Transport costs cut 10% claim

A REAL time system for transport distribution managers has been introduced in the UK by Freight Computer Services, bureau of the National Freight Company.

Called DIPS and developed originally by Vaughan Reid, an independent consultant formerly with BOC Datastore, the company claims that its system cuts transport costs by at least 10%.

DIPS runs on Freight Computer Services' dual Honeywell Level 66 in Birmingham under its nationwide time-sharing network, FCS Time. It took the company just three weeks to make the system "user friendly" with a minimum of work required.

For an initial £1,000-£2,000 outlay, including hardware terminal and contingent on the number of lorries, the user has 24 hours a day service from Monday to Saturday inclusive.

The package is based on a number of programs covering the whole distribution activity range, including account clustering, road network analysis, warehouse and depot location, plus strategic and daily operations involving delivery route planning.

DIPS' strategic distribution planning program is described as a total package designed to maximise the transport department's resources.

It considers relevant factors like changes in drivers' hours, effects of proposed legislation, interaction of several depot areas and evaluating fleet mix.

The system complies with EEC changes in driving regulations, under which there is an eight-hour limit on drivers' working days from January 1, 1981.

Daily route planning modules come into their own in bad weather conditions and in the event of vehicle failures, driver absence, road closures and other short-term distribution problems.

The package is also available to run on the customer's system. Users doing so already include Burmah Castrol and Dorchester-based brewery Eldridge Pope.

MICRO NEWS

Good gate at first show but its 'quality' varied

The Which Computer Show opened for the first time at the National Exhibition Centre in Birmingham last week, with a good initial first-day attendance of 4,300. Requested tickets before the show had totalled 24,000.

Over 150 stands just filled the

new Hall 7 at the NEC, which coped successfully with the visitors and exhibitors in all ways (bar their eating habits). The number of visitors was high - though their quality could be described as patchy, with a definite proportion of schoolchildren.

A few companies such as Rair and Sharp, which clearly fitted into the category of dealing in small business-oriented systems, were conspicuous by their absence. Their reasons could perhaps stem from the attitude of not wanting to exhibit at a first-time exhibition.

Another Japanese company, Sord, is trying to penetrate deeper into the European small business system market by setting up an assembly plant in Dublin. The site has been chosen and the building is nearly completed ready to start operation in a couple of months.

Sord management is currently recruiting staff in Dublin to run the complete plant. Up to now the two UK distributors, Edleigh Business Machines of Penzance, and Midas, have been shipping the units, which come in the price range of £2,000 to £22,000, from

the five assembly plants in Japan.

The company has recently launched a new range of 16-bit systems, the 243 series, based on the Intel 8086, but it was not ready to be launched at the show. In France Sord has been threatened with import restrictions unless it controls penetration into the country.

Exleigh Business Machines, which was at the show, currently operates through six dealers throughout the UK. With the introduction of the new range, about eight more are planned.

Commodore had a crowded stand, though it was not as large as usual. It probably took the spill of visitors normally scattered round the dealers' stands. There were few Pet or Apple dealers at the show.

One of the reasons for the low

interest was thought by Edgar Blazier, managing director of Cinsal, to be the need for a UCSD Pascal operating system. CIS-Cobol is only portable with Pascal and thus a Pascal compiler is needed.

However, the University College of San Diego (UCSD), does not supply its Pascal in one-off quantities. An initial outlay of a few thousand pounds is needed for 25 copies and then each copy can be obtained for a few pounds.

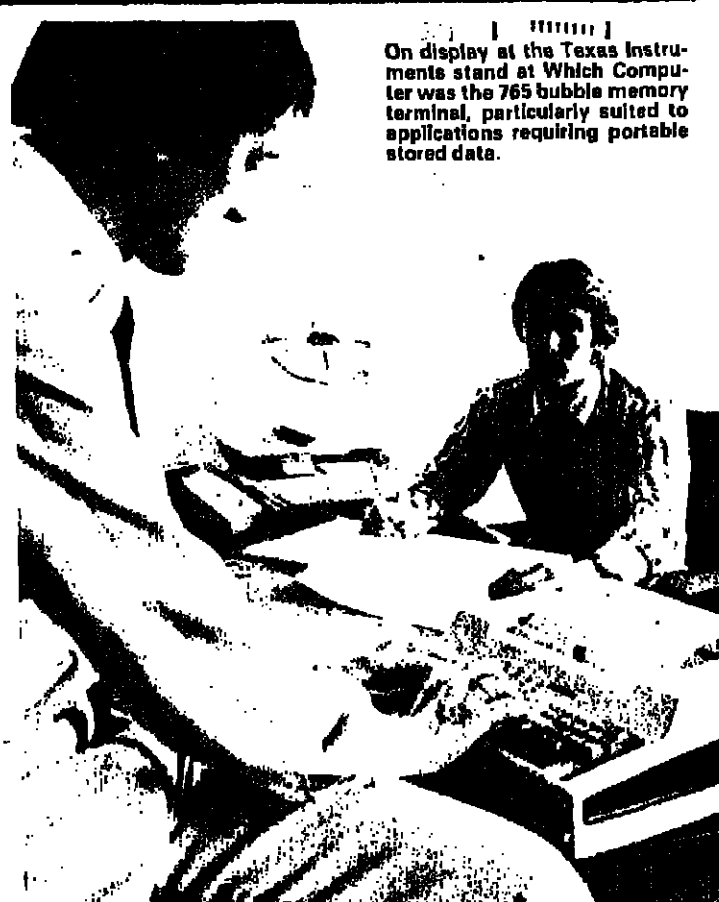
Cinsal will be using CIS-Cobol in-house for program conversions, but is not necessarily committed to marketing it on a large-scale basis.

Tandy went to town on its stand with a full classroom-type do-it-yourself demonstration. Anyone could sit at one of the 15 or so Model IIs and have a go at operating it. Also on the stand, for looking at only, were the recently introduced pocket computers manufactured for Tandy by Sharp in Japan.

Commodore had a crowded stand, though it was not as large as usual. It probably took the spill of visitors normally scattered round the dealers' stands. There were few Pet or Apple dealers at the show.

One of the reasons for the low

by Eileen Stainer



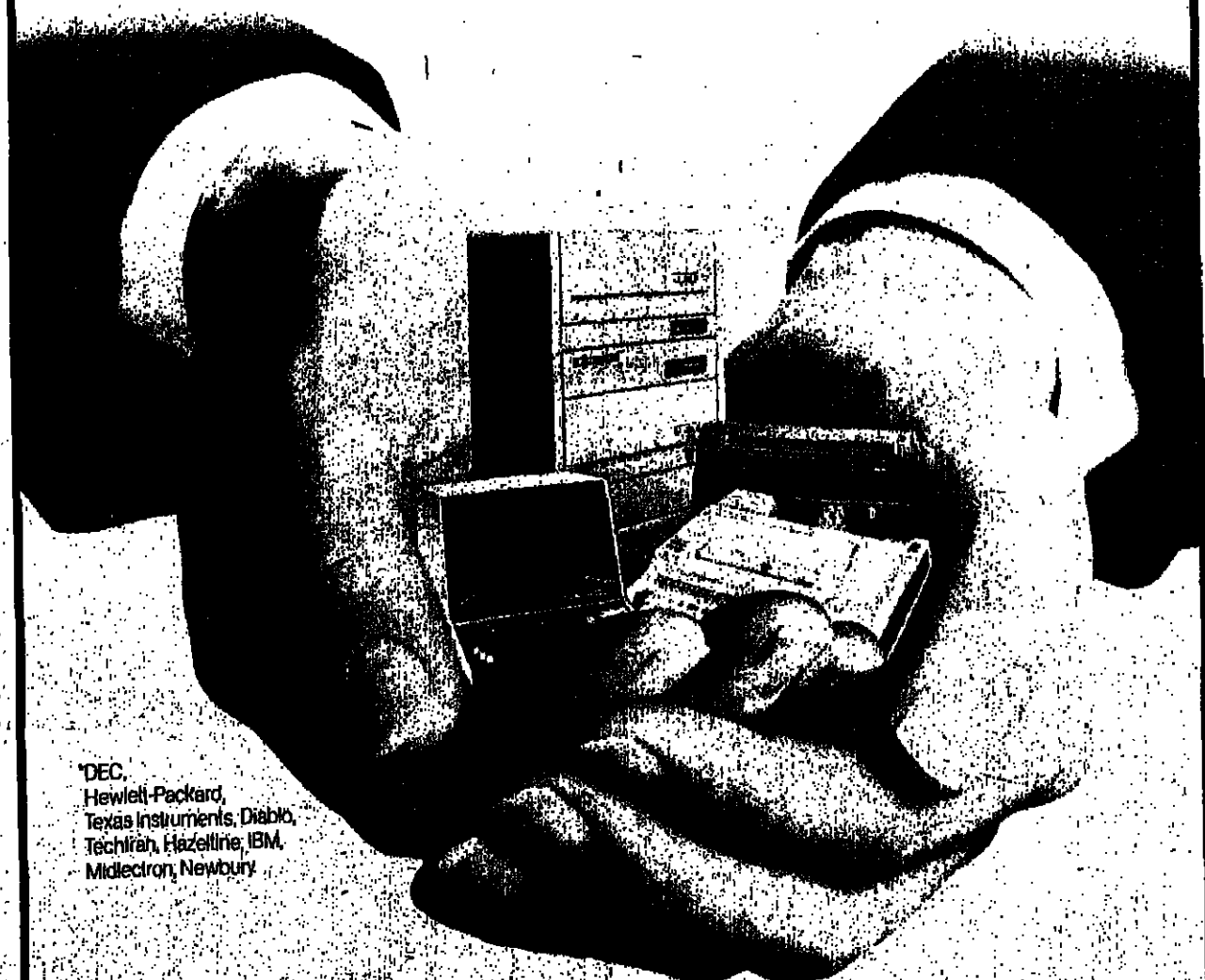
On display at the Texas Instruments stand at Which Computer was the 765 bubble memory terminal, particularly suited to applications requiring portable stored data.

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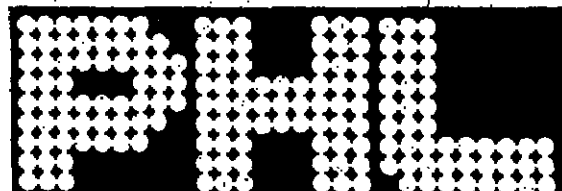
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PEOPLE and EVENTS

Goodall to join MicroAPL board

1980			Stock		Price		£		US Stocks		Price		£	
High	Low				High	Low			High	Low			High	Low
818	250	A Comp Tech (250)	520	218	31 1/2	11 1/4	Comshare	18 1/2	12 1/2					
818	250	BIC Inc (250)	520	218	31 1/2	11 1/4	Comshare	18 1/2	12 1/2					
42	22	B B Corp (250)	67	-	78 1/2	53	Comshare	21 1/2	15 1/2					
107	44	Chubb (250)	73	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
107	44	Com P.A. (250)	67	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
110	46	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
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118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
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118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	172	-	118 1/2	64 1/2	Catalist	11 1/2	7 1/2					
118	48	Conch (250)	80	-	118 1/2	64 1/2	Catalist	11						

Breakdown of functions

Section 1 — Part 10
of our series describing a
system design methodology
by Rosemary Rock-Evans

While Mitsubishi has no plans to sell in Europe at the moment the company is active in the US small systems market with two machines sold there as the 8018 and 8038 by its Los Angeles-based subsidiary, Mitsubishi Electronics America. The Los Angeles operation has developed Business Basic for the machines plus a range of applications packages tailored to the US market.

A slow and painful path to office of the future

WE all enjoy speculating about the office of the future. What better test of the imagination than to daydream about serene, efficient office landscapes dotted about with workstations and VDUs, and not a scrap of paper in sight.

The electronic office will be a reality one day, but a staggering amount of change has to take place before today's office can become the office of the future. It will be a slow and painful process involving dedication on the part of the marketing and technical people; and it will face office managers and unions with some tough decisions.

All these people will have to work closely together - and this is not always easy.

The problem is that every step involves difficult and weighty decisions between widely differing strategies.

Take wiring up, for example, one of the biggest headaches for

the manager contemplating investment in office systems.

He needs badly the enhanced communication that multi-station electronic systems provide, but his office building is already festooned with wire, bursting from every duct.

If he must submit to the chaos and expense of rewiring, he'd like to do it once and for all. What's the right solution?

Bandwidths

There is a wealth of advice obtainable about wiring up. Since the advent of local networks, marketing and technical people have begun to favour broadcast packet-switched networks whose ancestry can generally be traced back to Xerox's Ethernet.

Running at speeds up to 10 megabits per second, these networks have ideal performance character-

istics for the next few years' office systems.

But they use coaxial cable, not the easiest kind of wire to thread along a meandering duct. There is also cause for concern about the ability of these coaxial networks, once installed, to cope with the far higher bandwidths needed in the future.

Rather than wire up, we can try to live with what we've got. Some office systems manufacturers are capitalising on the ability of installed telephone cable to handle digital data at speeds up to 64K bits per second.

Buy a centralised system, and you can connect high speed terminals via your installed telephone network. This approach provides breathing space for those who can't face a rewiring upheaval, but leaves unsolved the problem of accommodating devices requiring speeds above 64K bits per second.

How does British technology, such as the Cambridge Ring, measure up as a solution to this problem? The Ring is a local network of a rather different kind from Ethernet and similar systems.

It operates on the "empty slot" principle, as if there were an express train circulating continuously, on and off which data packets can jump.

It has plenty of bandwidth for office applications. For the office manager, it has the decided advantage of requiring only a simple twisted-pair.

Concern is often voiced about the Cambridge Ring's vulnerability to damage of a Ring segment, causing all traffic to stop; the so-called "man with a spade" problem.

Logica VTS feels confident enough about the Ring to have progressed a long way towards an-

Safer with paper

PICTURED here with a Wordplex 1 word processor is Rosemary Gaskell-Taylor. A director's secretary in the NatWest's merchant banking subsidiary she says: "I am confident there will be a job for me at the end of the decade."

"The word processor," she continued, "has left no one in our department unaffected. Most of us have found our typing speed has increased, partly because the

tough is so light, but mainly because the psychological barrier of worrying about mistakes has disappeared."

She reckons you don't need mechanical aptitude to operate and is all in favour of modern technology.

"However," she says, "until the office systems are more reliable I shall feel safer with bits of paper to shuffle around."

ing issue.

With office systems companies moving aggressively into integrated text-cum-voice systems, exemplified by Nexos' Delta, many current notions about documents will require radical changes.

Local communication, filing and document representation are three major issues that we face in moving towards the office of the future. Progress on each issue is difficult. Underlying the discussion is a fundamental problem: a lack of agreement about the electronic office as a goal.

For example, there is disagreement about who will use the terminals that will populate tomorrow's office; will this remain a clerical worker's, typist's and secretary's prerogative, or will professionals and managers join the ranks of the users?

Is it possible, as some unions fear, that office systems will do away with large numbers of clerical jobs?

Little heaps

In addition, the secretary keeps binders, ready to hand, of frequently-used documents and frequently-updated files. She has in- and out-trays and a pending tray, that see a constant flow of documents.

She keeps little heaps of telephone messages. And, of course she has all manner of address lists, check lists, distribution lists, and other lists that are constantly referred to and updated.

It's difficult enough to devise an electronic system capable of representing all these files, but to do so and provide adequate speed of access is well nigh impossible.

The wary office manager is advised to consider very carefully the limitations of electronic filing techniques before committing to any one approach.

Before setting up the system, the manager must pay careful attention to avoiding built-in obsolescence.

Lurking behind the electronic filing issue is an even more formidable problem: document representation. If we want our electronic files to be useful, we must ensure that the filed documents are legible no matter what device was used to create them.

But in any large organisation we should expect to find many different kinds of electronic office equipment. It is true that some organisations standardise, but even they have problems with headstrong managers who insist on buying odd-ball equipment.

At time passes, more and more types of equipment are contributing documents to the file, and the chance of being able to read any document on one's own equipment decreases.

This problem will be solved only when a standard method has been devised for representing documents; this is a tall order as documents created on the typical present-day word processor contain all manner of formatting effects.

Consider next the problem of accommodating all of today's word processors, and you can understand the magnitude of the problem.

There are new representations like Teletex, but Teletex hardly scratches the surface of the format-

ing issue.

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Nasty surprises

The answers depend very much on what kind of electronic office systems we design, manufacture and market.

The different groups involved in office systems - technical, marketing, managerial, unions - are beginning to develop their own views of what the future will bring.

This is unfortunate, since it guarantees some nasty surprises in the long run. The office systems community badly needs a short-term common focus to bring the various interested parties together.

Office system market trials are beginning to fill the vacuum. To learn answers to the above questions, without risking a disastrous commitment of resources, some organisations are installing innovative office systems on a trial basis, to gain experience and understanding.

Increasingly, they are involving participation from unions, managers and technical people. Early US pioneers in this field were Citibank, with its Lexis System, and Xerox market probes in the White House.

In this country, the government's Central Computer and Telecommunications Agency (CCTA) has been active in market trials of word processing equipment. Within the more general office-systems field, British Telecom is taking a step with Project Albert, Phase I of which has been contracted recently to Logica.

Market trials are an important way of making progress towards the office of the future, because they permit difficult decisions to be made at lower risk and with a better chance of learning for the future.

Market trials place the emphasis on learning from experience; this is what Britain needs to retain a leading position in the electronic office.

Call for message services with a human interface

by Dr Ken Beauchamp of Lancaster University

A CALL for powerful message services designed around specific applications with tailored human interfaces and even specialised terminals was made at IFIP 80 by Professor Peter Kirstein of University College, London.

In an address on "New text and message services", Professor Kirstein expressed an overall theme for the conference when he said that far too often the various communications services required by the user were considered in isolation to each other and compatible standards were not being developed fast enough either by the organisations providing these services within a given country or by the international planning committees.

He also warned that easy access via public data transmission systems were essential and that any service must be economically viable. Those countries which adopted a flexible and enlightened attitude to the questions would have a clear economic and social advantage over those which did not.

Growing

Dr Philip Hughes of Logica said the Eurodata '79 Survey, undertaken on behalf of 17 Western Europe PTTs, demonstrated that the usage of data communications in Western Europe is growing more rapidly from a bigger base than was previously thought. Dr Hughes indicated some of the main estimates for 1979 and Eurodata's forecasts for 1987.

It was encouraging to find a strong degree of similarity between countries. There was less difference in the level of data communications usage between countries than there is between industries, said Dr Hughes.

Within the overall market estimates there are strong movements by users towards the lower costs and higher performances offered by the PTTs for new services such as teletex and videotex. These are expected to be popular and their rapid adoption by users is expected to lead to a substantial increase in the relative importance of the application concerned.

Network Termination Points (NTPs) are growing at a rapidly increasing rate with a noticeable trend towards the higher speeds, particularly 9,600 bits per second. The forecasts suggest that 30 per cent of all NTPs in Western Europe will be on public data networks by 1987.

Changes

Distribution of applications is expected to shift away from general management and banking towards person to person communication and information retrieval.

These changes will be brought about by new services and technologies, such as teletex and digital

facsimile, all expected to boost the rate of application growth to become the second most important application of data communication with 78,000 terminals in Western Europe by 1987.

The study also suggests that there could be 2,700,000 domestic videotex terminals at the end of the forecast period, he concluded.

Many similar expressions of confidence in Europe's technological future were made by other speakers. M. Texier, representing the Direction Generale des Telecommunications, France, spoke of the importance of early definition of the new telecommunications administration.

He outlined recent ISO and CCITT work on the definition of a model for network architecture, its advantages and limits. Special emphasis was being made on a network-independent transport service - now a key issue identified by many speakers concerned with standards issues.

Much work had been done using primitives. Despite difficulties in defining a family of transport compatible protocols this was the only real way forward, he said.

In describing services France will provide in the next few years, Texier said that one videotex terminal would be given to every current telephone subscriber in the Ile de France region by 1982.

Gateway

Similar themes were referred to by Professor Inoue of Tokyo University who surveyed fast developing communications in Japan and the development of internet-work facilities, satellite communication and radio nets.

Several papers described the difficulties of protocol conversion and the requirement for gateway services. M. Ferragu and his colleagues from CCETT in France provided details of an international gateway being developed to link Transpac to other public packet networks.

These include Telenet, Tymnet and Burotel and a future version will also include the Canadian Datapac, the Japanese Vnet and the emerging Spanish network.

This gateway offers a virtual call service conforming to X75 and X25 and works with a multi-line transfer procedural operation Level 2.

Queuing

Multi-netting has created its own set of problems. Professor Kleinrock from California University gave a paper on a queuing problem. He considered the situation in which two buffered packet radio units interfere through sharing a common slot in an Aloha broadcast channel.

His solution was a scheme called topological approximation, which aims to replace approximate solutions of an exact model with an

exact solution of an approximate model obtained by perturbing the topology of the interference. This was an elegant, if highly theoretical, paper.

Dr Manning, of Waterloo University, Canada, gave an outline of his work over the last six years researching into distributive computer systems.

Taking us through several stages of development involving the Mininet system, two variants of the Moose system, HXDP, KOCOS and CMMP, he concluded that a set of processes running in disjointed address spaces and provided with a message-switched IPC appears to offer several advantages as a model for software design. Among these are claimed the ability to distribute a set of processes among machines with minimal impact on design.



HUGHES ... Within overall market estimates, there are strong movements by users towards lower costs, and higher performances offered by the PTTs for new services, such as teletex and videotex, are expected to be popular and their rapid adoption by the user is expected to lead to a substantial increase in the relative importance of applications concerned.

Electronic mail boxes are high on agenda

SIXTEEN key issues have been identified by the new IFIP working group 6.5 on international computer message services, Dr Uhlig, the chairman, told a panel session.

One of these - the use of computers to mediate human to human communications in the form of electronic mail boxes - has been the subject of much discussion in and outside IFIP, especially by members of the DP community concerned with social and economic implications of computers.

Taking part in the IFIP panel session were Ms Feinter, currently with SRI International, who described the work of the Arpanet information centre; Professor Kirstein who talked about the need for international agreements on message services; Dr Naffah from IRIA; and Dr Gupta from India who stressed the be-

neficial impact of "leap frog" technology which message switching could have on developing nations.

Australian PSS

AUSTRALIA is to bring into service by 1982 its own public packet switching service network which will run at 48,000 bits per second. Called Auspac, it will be similar to the UK's PSS system and will conform to the CCITT X25 and X28 standards.

The first switching centres are to be based at Sydney and Melbourne. The packet mode terminals will be limited to 9,600 bits per second and asynchronous mode terminals, using a packet assembler/disassembler, will operate at up to 1,200 bps.

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"I created a special equipment report in 15 minutes flat. Before, it would have taken a day and a half of programming."

Chuck Potter, Data Processing Manager, Road Machinery and Supplies Company, Minneapolis.

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Larry Krueger, Director, Corporate Information Services, United Merchants and Manufacturers, New York City.

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Contact: David Hendry

Communications Consultants

London based to £15,000
JBA have been retained by a leading computer and telecommunications consultancy to assist in the recruitment of high calibre technicians who will be based in London, although opportunities exist for work abroad as well as in the U.K. Selection criteria include a detailed knowledge in at least one or more of the following areas:

- * Packet Switch Networks
- * Message handling and Front-end Systems
- * Network architectures
- * Protocol conversion
- * Software Engineering

Candidates will have been working in one of the above areas for at least 6 years, either with a computer/communications equipment supplier, a consultancy, or a large data communications user organisation. A good degree or equivalent professional qualification is required. Salaries commensurate with experience, will be in the range £10,000-£15,000.

Contact: Margaret Stevens

Senior Analyst/Programmers

Dublin to c. £11,000 + benefits
An established systems house operating throughout the Republic from the Dublin office currently have urgent need to strengthen their project teams. Working mainly on financial systems on IBM hardware, you will be responsible for assessing client requirements, designing, programming and implementing the specific systems and be involved with all aspects of customers support. It is essential that applicants have sound commercial analysis knowledge with several years COBOL and DLI as well as good experience of a CICS system. You must also display the ability to communicate at all levels and be prepared to travel when required.

A negotiable salary is available, expenses and an annual bonus.
Contact: Brian Postles

Software Engineers (Micros)

Berkshire £8,500 +
Our client, a market leader in the engineering industry, has established a new division in microprocessing, and now needs micro software expertise to fulfil current and future projects. It is essential to have at least two years' experience of micro software development on industrial systems, a good educational standard i.e. a degree or equivalent in a science or related subject. A knowledge of INTEL machines would be a definite advantage. Candidates would ideally be in their late twenties and have the ability to communicate at all levels.
Contact: Janet Chilvers

Reservation Systems Maintenance Manager

Dover Salary negotiable to Experience
We have been retained by a leading ferry operator to recruit for them an experienced computer professional to take responsibility for the on-going maintenance and development of a sophisticated real-time reservation system. The successful candidate will be required to liaise with outside software suppliers and to co-ordinate the activities of user departments. A strong ICL background coupled with exposure to on-line systems is essential. This is an unusually demanding role requiring a mature individual with sound administrative capabilities who is able to work under his/her own initiative. An excellent salary together with concessionary travel.
Contact: David Hendry

Communications Programmers — Babbage

South West of London £8,000-£9,000
Continuing expansion of our client's international Videotex business has created opportunities for CEC 4000 Babbage programmers in real-time and network systems. Applicants should have at least four years programming experience and be capable of teaching packet switching, colour and business graphics, in this fast moving and exciting field. Possible overseas travel.
Contact: Jim Baker

Mini Support Analyst Programmers

London £7,000-£8,500
Due to steady expansion, our Client, an internationally known mini manufacturer, specialising in the marketing of banking, word processing and library circulation systems, wishes to recruit two programming professionals to join their development/support team. A minimum of two years on-line programming experience, preferably gained in a mini environment, would be ideal, but consideration will be given to other high calibre candidates. Training facilities and career prospects are excellent as this organisation firmly support promotion from within.
Contact: Isabel Bruce

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Tel: 01-439 9311.

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Our client is looking for experienced programmers who would relish the opportunity to take responsibility for technical system design, and who will also be able to provide the technical leadership for the programmers on a project team.

You will be working for one of the largest and most secure international companies in their sector throughout the world. They are also highly progressive and are in the forefront of office automation. The data processing organisation has a history of expansion and offers excellent prospects of further career development.

They use twin IBM 3032 processors and have a network of 300 terminals including distributed processing supported by IBM 3730's and 8100's.

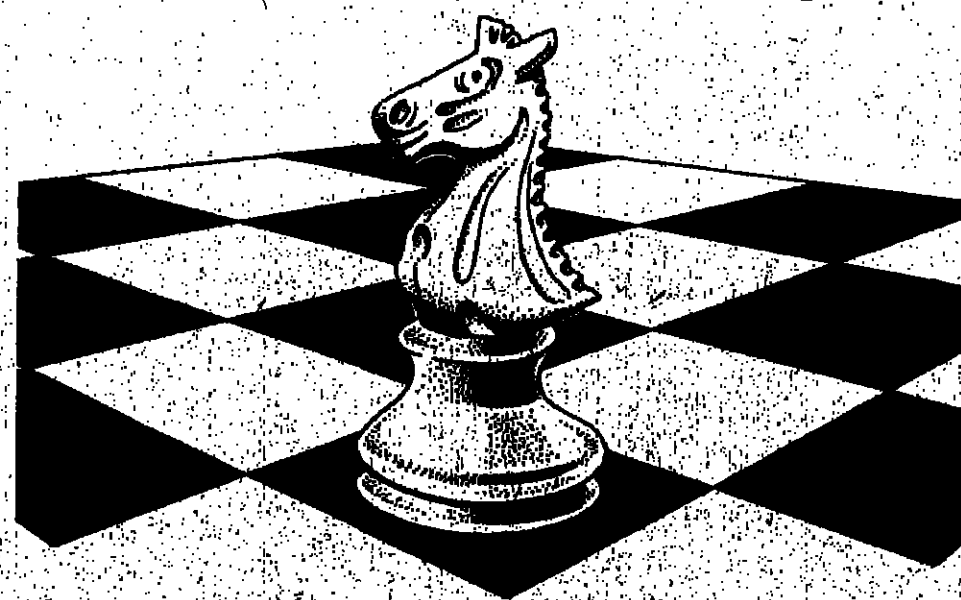
But whatever your equipment or language background, our client's major commitment to training will ensure that you will be brought right up to date on IBM equipment, and stay there.

The company will pay you an excellent starting salary of up to £9,500 p.a. together with other benefits. If you need to move house, there is a choice of attractive and affordable properties within easy reach and relocation assistance will be provided.

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MYRIAD

INTERNATIONAL DATA NETWORKS COMMUNICATIONS ENGINEERS

**£7,000-£10,000
READING BASE**

Due to the increasing importance and continuing growth of the data communications industry we are seeking additional engineers to join the Product Engineering Group of the industry's market leader. The company is experiencing ever-increasing demand for its sophisticated range of data communications products and is therefore expanding its engineering and support groups to cope with significantly increased workload.

The Product Engineering Group provides a high-level technical support service to users throughout Europe. This includes the provision of a consultancy service on network design and application, system specification and costing, monitoring new development in the market and training users.

The general requirement is for candidates who are educated to degree level in either Electronics, Physics or Computer Science with post-graduate experience in either data-communications technology, digital electronics or micro-processor application.

Dealing with prospects and users throughout Europe a degree of international travel will be involved and the ability to work without immediate supervision is therefore important. The company can offer extremely bright prospects for future career development coupled to a high commencing salary and valuable conditions of employment including comprehensive relocation assistance. Telephone to discuss these opportunities in detail or alternatively write to us quoting reference SW1/0412/CW.

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Based on the Middlesex/Surrey border, our client is a well-known major organisation able to offer a secure future and positive career progression. They make extensive use of a wide range of hardware and successful candidates can expect to broaden their experience to encompass UNIVAC and the IBM 4300 series of computers.

Additional Programmers and Analysts are now required to enhance the development team which is about to embark on various new interesting projects.

PROGRAMMERS with a minimum of TWO YEARS' COBOL experience on any mainframe and ANALYSTS with a programming background plus two years' systems analysis, should contact Myriad now, quoting reference C1/0412/CW, to learn how these vacancies can benefit you.

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HAVE YOU:

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- ★ Potential to utilise the latest advances in software technology.
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Our client can offer unique opportunities for software programmers, at all levels, keen to pursue a career within an organisation recognised to be at the forefront of this major growth area.

The company offers excellent conditions of employment including a generous relocation package where appropriate. A first-class starting salary will be offered coupled to outstanding long-term career prospects. Telephoning now to discuss these positions in detail or write quoting reference SW4/0412/CW.

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(3809)

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London

Up to £12,000

Our client is an established supplier of quality real-time and other computer bureau services to several blue chip organisations.

They are a technically adventurous organisation, having designed their own database and real-time systems. This has meant that they have a much more interesting technical section than is usual in a commercial environment. The result is an opportunity for graduates to be involved with real-time systems, database and data communications software.

A major enhancement of the twin CPU's together with a significant expansion of the intelligent terminal network will give further opportunity for the group (of four people) to develop their skills and give full job satisfaction.

If you have substantial system software experience (perhaps five years or more) and are seeking a technical challenge in a company that provides significant benefits in addition to salary, and has offices in an interesting part of Central London close to tubes and with easy access to mainline stations, then ring us, in confidence, quoting reference 315. (Messages will be recorded after hours.)

(3821)



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datascene

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The successful applicant will have developed his or her career at some stage in a BANKING ENVIRONMENT and have at least three years' AIMS experience allied to responsibilities as a senior programmer or team leader. The duties would entail a reasonably high programming content, but the candidate would also be involved in the training of existing programming staff, acceptance testing and user contact.

In addition to a competitive salary the usual bank fringe benefits will apply.

In the first instance please contact Roger Wilkins at Datascene quoting ref. R4584.

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Scotney House,
168-173 Regent Street,
London W1R 7FB. Telex: 25851.

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(3784)

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Quadrant is a well established expanding software house
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- DL/I, ADABAS database

We offer:

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Contact: IAN PEMBERTON
on 061-928 8302 (24hr Answering Service)
or write to Ashley House



Quadrant Software Ltd.
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JBA

SAUDI ARABIA
Analyst/Programmers
to £19,000 + car + accom.

This established software consultancy is continuing to expand rapidly and has an urgent requirement for experienced Analyst/Programmers. Working in the areas of on-line commercial applications, including inventory control and accounting, you must be dedicated and energetic and be capable of taking projects through from feasibility to on-site implementation. Essential qualities are 3-4 years COBOL, plus substantial analysis exposure during this period, gained preferably on IBM SYS 34. Bachelor status is preferred but equal consideration will be given to married applicants without children. Tax free salary, plus furnished accommodation, plus a company car are included in an excellent package. Initial interviews will be held in London.

Contact: Brian Postles

Communications Consultants

London/Berkshire to £15,000

An internationally known systems house are currently looking for people experienced in the design and implementation of large scale distributed computer systems. It would be preferable to have IBM experience but not essential. For senior appointments, candidates must have been involved in the implementation of a network using IBM SNA. It is essential for all candidates to possess a broad understanding of software and an in-depth knowledge of the concepts and practices of communications interface software.

Contact: Janet Chilvers

Software Engineers

South West of London up to £13,000

Further growth in our client's international Videotex business has created openings for Software Engineers to work at various levels on exciting new product development. Candidates must be graduates with a minimum of 8 years experience, at least two on real-time mini computer systems.

Ability to develop high performance, multi-lingual software products to exacting new international coding standards is essential. Knowledge of packet switching, colour, business graphics or data-base indexing techniques would be an advantage. Opportunities exist for international travel.

Contact: Jim Baker

Senior Systems Analyst

City £11,000 +

We have been retained by one of the U.K.'s largest transport service organisations, to recruit an experienced systems analyst to fulfil a senior role within their development division. Systems are all of a financial/commercial nature, and are used in either on-line or real-time environments.

It is expected that candidates would have good academic qualifications, a sound data processing background, and the ability to deal with users and their problems.

Contact: Janet Chilvers

Analyst/Programmer

Hertfordshire neg. to £10,000

Our client, a well established marketing company who specialise in sound recording equipment, are currently expanding their D.P. department. They are developing a sophisticated real-time sales and distribution system as well as order processing and general batch, all of which use data base techniques.

They require an Analyst/Programmer to assist the Computer Manager in the development and maintenance of their ICL 2904 site. The successful applicant will be required to have a working knowledge of COBOL and be able to work under his/her own initiative.

An excellent salary coupled with attractive fringe benefits complete the package.

Contact: David Hendry

Programming Team Leaders

City to £10,000

Our Client, an International Shipping Organisation, is embarking on a major programme of new applications development and is seeking two Senior Programmers to lead existing project teams.

It is essential to have at least four years programming experience, consisting of two years on IBM mainframes using COBOL with extensive knowledge of OS/JCL. The ability to write program specifications and modularizations is of prime importance.

Contact: Isobel Bruce

Senior Systems Analyst

N.W. Kent up to £9,000

Our client, a successful specialist engineering and manufacturing organisation, has an opportunity for a Systems Analyst who is looking for a career step with considerable future potential.

Candidates should be graduates, or professionally qualified, with an extensive systems background in developing commercial applications, preferably in a manufacturing environment using ICL equipment.

This is a key appointment in D.P. development and applicants must have the personality, presence, leadership, intellect and capacity to deal with all levels of management and staff. Large Company benefits.

Contact: Jim Baker

Programmers — Financial Systems

Rural Hampshire to £7,500 + Mortg. Subsidy etc.

A large and expanding insurance Company are currently seeking experienced COBOL programmers to strengthen their project teams involved in development of sophisticated financial systems.

Current configuration includes: Redifon 1101 and Burroughs B6800 mainframe. Incorporating batch systems and on-line testing facilities.

Experience must include 18 months COBOL, not necessarily in a financial institution. An excellent training programme has been devised to assist career progression.

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Contact: Brian Postles

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MIDLANDS APPOINTMENTS



Effects of recession on the job market

by John Wood, managing director of EMS

Advances in technology have made many users largely independent of computer specialists. Added to the financial cutbacks made by many companies, they result in fewer jobs for DP staff, and those few have very stringent requirements. John Wood reviews the job scene, in which many DP people now find themselves unemployed.

At the present time, it may well be of interest to the market to realise that recruitment demand on a national scale has dropped by approximately 75% throughout the market base. Almost all advertising nowadays is placed by consultancies competing against each other, often for the same basic jobs, in the hope of weathering the effects of the recession, and often these companies advertise jobs which have not yet been fully approved on customer budgets anyway.

The companies most able to adequately ride the effects of this recession, the large adequately funded multi-nationals and long-established public corporations, have almost entirely re-organised their development planning within the DP sector and have cut back on recruitment altogether.

An interesting trend is now becoming powerfully self-evident today are for specialists or technicians. The day of the standard over-

prized Cobol programmer with inadequate qualifications and poor background experience is rapidly coming to an end. The market has no interest in trainees, juniors or anyone unable to contribute directly and immediately to department achievement.

Experience

The only people generally in demand nowadays are analysts with experience of online systems, database or network systems. In addition, programmers need to have either database experience or some experience of minicomputer systems, preferably in addition to three or four products from IBM, Honeywell Level 6, DEC, odd incidental requirements for the rest of the marketplace.

Again, an interesting fact emerges. A number of candidates are coming on to the market who are technically obsolete; the market is unable to value the product owing to almost total lack of demand.

Redundancy is escalating already within the industry and in the Midlands alone, with the collapse of literally hundreds of significant-sized organisations which have now gone into liquidation, there are already several hundred people available in the job market.

It is possibly a fair statement that many hundreds of people either recently made redundant, or about to be made redundant within the DP industry, will either have to accept jobs in future at a significantly lower salary and seniority than those to which their careers had originally progressed in order to get back into the industry where the rare opportunities may occur, or that the vast majority of such people may well find that the industry simply has no place for them any longer.

The direction of the industry is clearly changing and the changes are occurring mainly because of the independence of users. A high percentage of delegates attending exhibi-

tions and seminars tend to be finance directors, accountants, sales managers and stock production managers, all seeking their own independent facility divorced from central installations.

They will have to wake up to the fact that they have one, or at best two years to deliver all pre-committed outstanding systems into the hands of the users. After that, the impact of market penetration by the mini and micro vendors into their own companies will cause severe cutbacks in operating budgets available to central departments in future.

Survival

The vested commercial interests of the mini and micro vendors, which include the central mainframe manufacturers themselves, are now so pre-committed that DPMs have a single basic direction to take for personal survival.

Such job roles will have to change into a business systems management function, and if they are not curtailed as a result of adequate investment and forethought during the last decade, they are likely to be cut through lack of investment capital during the next two years.

We have identified a number of factors which too few companies are taking into account, and which perhaps pre-empt the extreme levels of change which our industry has not yet acknowledged. Management in the US, unlike that in the UK, has for

many years been prepared to accept a 90% instantaneous DP solution for only 20% of comparative development cost, and to enhance the peripheral aid with odd program development or via external manpower support.

With significant advances in technology, by the time most companies ever get around to completing original systems development, their equipment will have become obsolete and will require changes to be made, which in turn can involve high software conversion costs.

Most development projects are now coming to an end, and if they are not curtailed as a result of adequate investment and forethought during the last decade, they are likely to be cut through lack of investment capital during the next two years.

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parent organisation from corporate level downwards will need to change pro rata.

The argument could be put forward therefore that the future direction of the industry will primarily be to buy in a new control system at the same time as a new computer and accept the obsolescence of both over five years.

As most software vendors and producers will responsibly accept, the ultimate direction of primary software development towards a firmware marketing base is inevitable and the days of the average installation hierarchy are numbered.

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Awareness

As user management has been forced to educate itself into the performance, cost and capability of DP aids, there has been a growing awareness relating to significant cost savings of acquiring an external package solution and enhancing the odd 10% where necessary in order to gain rapid benefits and significant cost savings. The days of custom building for a high percentage of the industry are rapidly drawing to a close.

The majority of companies have completed primary systems development and are themselves seeking distributed solutions via the software houses. The smaller companies are unlikely to be able to afford to continue operating in their present fashion as development organisations. The costs are prohibitive.

Therefore, as companies are progressively having to diversify into new markets, the control requirement of the



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The International Air Transport Association (IATA) has an immediate vacancy for an APL Programmer in its Geneva, Switzerland office.

Position: The successful candidate will become a member of a project team which is currently developing the "IATA Statistical Information System" on a Prime-550 computer. The development of this system will eventually consist of numerous statistical data collections relevant to the aviation industry.

Main Tasks:

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021-632 6848



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EMS urgently need sales professionals with a proven track record capable of marketing a minimum £200,000 worth of new computer based systems inclusive of initial software revenues. We are at the present time involved in extensively marketing advanced and fully integrated on-line systems to the manufacturing, stockholding and distribution base throughout the UK, and urgently need highly motivated, experienced sales negotiators capable of assisting us rapidly expand our marketing activities during the coming year. Sales support will be given in the areas of extensive advertising, mail shooting, group seminars, occasional exhibition attendance and other special marketing techniques used in-house. We will in addition be seeking canvassing experience and a level of salesmen capable of initiating relatively early business with a minimum of group supervision. We are only seeking proven and experienced negotiators who can become involved in a fast growing organisation and produce high personal sales based on individual merit. There are no cut-offs applied to sales earning levels and an opportunity for hardworking, conscientious salesmen is one not to be missed for candidates seeking to dramatically increase their own personal earning levels based upon results achieved. We have an extensive series of projects, quite dramatic plans for a successful salesforce during the 1980s. Contact us initially in the first instance for a meeting at our Birmingham Data Centre.

Telephone No.: 021-454 7906. John Wood or Diane Bosworth.

PROJECT MANAGERS/SYSTEMS DESIGNERS

The EMS Group are seeking additional experienced Project Managers capable of effective team management able to handle multiple projects to enable us to install an increasing number of turnkey systems during 1981. The company already has a significant base of on-line modularised software development and the majority of tasks will involve building enhancements to pre-established systems and both planning and controlling system testing prior to client installation for a wide variety of UK products. A sound systems design knowledge will be important as will the ability to undertake feasibility studies and prepare accurate systems specifications on client requirements throughout a wide range of industrial and commercial trading sectors. Sound business communication is important, as will be the ability to control staff and effectively motivate a team with sound leadership abilities. We seek candidates able to accept a degree of pressure working to tight deadlines in a number of systems volatile industries. We do not envisage candidates under 28 years of age having attained the relevant degree of manpower control experience. Salaries will be negotiable with the opportunity of acquiring a company car for relevant positions once candidates have proven their ability to perform satisfactorily at a Senior Project Manager level. We seek Managers capable of promoting and maintaining effectively designed systems in a disciplined and well-documented environment which will need their personal control and responsibility. We offer an interesting and varied range of projects, good future career development opportunities for key performers.

Telephone No.: 021-454 7906, Ian Gapper.

PROJECT MANAGERS

Pre Sales Support — Midlands — from £9,000 p.a. & car
EMS are expanding significantly in the Turnkey Systems sector during 1981 and onwards. Having made a substantial investment approaching £1 million already in the development of integrated on-line packages, we need experienced Systems and Business Analysts to assist the Sales campaign in the areas of Feasibility Studies, Tender Preparation, Package Demonstrations, Seminar Presentations, through to Post Installation Training and Support. We are seeking soundly experienced Analysts with a minimum 7 years' programming, preferably in Applications areas including Accounting, Stock, Purchasing Systems, Invoicing, Ledgers and Payroll. You must have personally controlled a team responsible for designing and installing at least 3 full systems during the last 2 years, or at least 2 major systems. Ability to correctly size jobs accurately, and to carry out detailed and accurate feasibility studies will be essential. Your projections are supported by the company's financial commitments. Professional competence is therefore essential. We in turn offer a very interesting and varied employment opportunity, involving negotiations covering the whole spectrum of industry and commerce, with on-going client contact at Board or Senior User level. These are positions enabling Project Managers to use the benefits of their experience to make a major contribution to a fast-expanding systems building group with some of the most advanced products in the industry. Some degree of mobility is important as a significant amount of commuting to client sites is involved with occasional overnight visits away from home, although naturally kept to low requirement levels. Sound presentation ability is important to accurately assess client requirements over and above our basic package facilities and to correctly size up the relevant technical and commercial aspects of the required system. Attractive salaries and career opportunities are available for the right candidates. We envisage all candidates having progressed to a minimum £7,500 salary already before being ready to apply for these positions. Mini computer experience would certainly be a useful attribute although not essential.

Contact Ian Gapper — Systems Development Manager.
Telephone No.: 021-454 7906

EXPERIENCED ICL 2903/4 ME28 COBOL PROGRAMMERS

Birmingham or North Staffs Positions — to £8,000 p.a.
EMS are developing an ICL Software Development Division based on in-house 2904 and remote 7602 equipment, providing client custom building and package development facilities. A wide variety of projects exist with staff needed in an almost constant development role. Vacancies exist both at our Birmingham Data Centre which has 7602 video control. Staff line connection to the Head Office at Newcastle-under-Lyme, Staffs, and at the Head Office itself. Occasional daily travelling to client sites will be involved. Ability to work in small self-motivated project teams will be important, as will the acceptance and personal commitment to achieve results within agreed time and date schedules. We are seeking candidates with a minimum of 1 year's experience of ICL 2900 equipment to work at either centre. Apply initially to Patrick Cox, Programming Manager, or Beverly Proudman.

Telephone No.: 0782-623665.

PROGRAMMERS — COBOL, PL/1, ASSEMBLER, BASIC

Various UK Locations — to £8,000
EMS are seeking a number of experienced programmers for numerous installations throughout the UK, especially so for the Southern region at present. We need programmers for most major ranges of hardware, to work on mainframe and mini projects in a wide range of applications areas including on-line programming, TP and Database. Any experience of minis can also be especially useful as this is the fastest developing market of the 1980s. Irrespective of salary or location, complete the career form today. You could be surprised at the range of opportunities available via EMS which are never advertised.

Contact Beverly Proudman.
Telephone No.: 0782-623665.

TURNKEY SALES MANAGEMENT

Midlands — Negotiable salary package. Board prospects
We urgently require a soundly experienced Sales Manager seeking the opportunity of joining a futuristic and dynamic Turnkey group, concentrating on supplying modularised software based systems to manufacturers, stockists and distributors. Additional vertical market products are nearing development completion including a car leasing and maintenance system, fresh food distribution systems through to electronics order processing and stock systems. A high degree of intellect and motivation will be required. Ideally the right candidate will be capable of recruiting and effectively controlling a sales team to aggressively market an advanced series of systems. A significant personal sales achievement will be necessitated during the first two years to help initiate a significant market penetration. The unit currently has 11 systems sold, most marketed as development sites by the group MD. The urgent requirement now is to recruit a Top Sales Manager with the ability to achieve a personal sales target of at least £250,000 a year whilst starting to develop a high level sales team of two staff during 1981, and further growth development upon results obtained. Numerous excellent marketing aids are available, far more prestigious than the average Sales Manager has ever had to back up sales campaigns before, including video film aids and publicity material. An excellent opportunity to progress within a fast expanding group now exists. Board prospects could be available ultimately for adequate results and strong managerial control. This position will be Birmingham based in a modern central Data Centre. An attractive salary package is available with a sound career opportunity for a top productive manager. Progression will be singularly based upon results with a high dependence upon personal achievements during the next two years. Systems are based upon the very successful Honeywell Level 8 Series. No candidates under 28 years of age will be considered. A personal track record of achievements during the last 3 years will be sought, preferably with mini computer, or direct manufacturing system sales experience. Company cars are supplied.

Apply initially for application form: Diane Bosworth — 021-454 7906

SYSTEMS ANALYSTS

West London — to £8,000 p.a.
A chemicals based organisation which relies heavily upon computer systems are looking for a large number of additional experienced analysts, preferably having at least 1 year's commercial systems experience using IBM system 34. Some knowledge of DMAS or MAAPICS would be advantageous. The company are also prepared to take on trainee analysts who should preferably be educated to graduate standard either in computer science or business studies.

A wide range of interesting project developments are available within a large, secure international organisation.
Contact Colin Phillips — Contracts Manager
Telephone No.: 0782-623665

Top Contract Vacancies £250-£350 p.w.

Southern

Assembler OS Progs. — Kent — 6-12 months.
Cobol IDS-2 Honeywell Progs. — Level 88 — 6-12 months.
PL/1 OS Progs. — Kent — 2 years.
Analysts — Life Assurance — IBM — South Coast — 6-12 months.
IBM DOS Cobol — CICS Progs — Barke. — 9 months.
Honeywell IDS/TDS Progs. — Cobol — London or Home Counties — 6-12 months.
ICL New Range Analyst and Progs. — Cobol VME — London or H. Counties — 6-18 months.
IBM Cobol Progs. — South Coast — 3-4 months.
Honeywell Cobol Progs. — IDS/TDS — London or Home Counties — 6-12 months.
CNC Reality Progs. — Basic — Somerset — 6 months.
DEC PDP Progs. — Basic — Kent — 3 months +.
IBM Cobol Progs. — DOS/VSE — DLI preferred — Essex — 6 months.
IBM Systems Prog. — Assembler — Cobol — CICS — Essex — 3-6 months.
IBM Prog. — OS — PL/1 — CICS — Kent — 8 months.
IBM Cobol Progs. — CICS — Berkshire — 8 months +.
ICL New Range Progs. — Cobol — VMEB — London or Home Counties — 6-12 months.
Prog. — Fortran — Degree 1st (Maths/Physics) — London — 8 months +.
IBM OS/VSE — Cobol — Progs. — Min. 5 years' experience — South East — 8 months.

Midlands

ICL Cobol 1800 Progs. — George III — Crews, Cheshire — 6 months.
PL/1 Progs. — IMS/DB/DC — Birmingham — 6-12 months.
DEC Macro 11 RTL — 2 Progs. — Birmingham — 6-12 months.
Honeywell Level 84 Cobol Progs. — Birmingham — 6-12 months.
Honeywell L8 and Series 68 — Systems Progs. — Networks — 12 months.
IBM Cobol OS/DOS — DLI/1 advantageous — various Midlands — 6-18 months.
IBM Progs. — PL/1 — IMS — DB/DC — 6 months +.
ICL 2900 Cobol Progs. — VMEB — 6 months.
Honeywell Level 8 Progs. — TPS — Birmingham — 6-12 months.
Honeywell Level 64/68 Cobol Progs. — IDS/TDS — Birmingham — 6-12 months.
Univac 1100 Cobol Progs. — Birmingham — 6-12 months.

Northern

ICL 1900 Cobol Progs. — Filetab — Manchester — 6-12 months.
Honeywell L88 KDS/TDS Cobol Progs. — Liverpool — 6-12 months.
Numerous Analysts — Commercial Systems — Liverpool — 6-12 months.
IBM DOS/VSE Cobol Progs. — CICS DL/1 — Manchester — 1-3 years.
ICL 2900 VMEB Programmer — Mid. — Manchester — 6 months.
IBM Assembler Programmer — Liverpool — 6 months.
ICL 2900 Cobol Programmer DME — Hull — 6 months.
IBM Cobol Progs. — CICS — Teesside — 6 months +.
IBM Prog. — MVS — Assembler — Payroll — Sheffield — 6 months +.
IBM Cobol Progs. — CICS — Merseyside — 6 months.
IBM DOS/VSE Cobol — Progs. — CICS — DL/1 — Manchester — 12 months.
IBM System Prog. — MVS — IMS — Manchester — 3-6 months.
Univac Prog. — Exec 8 — Assembler — Fortran — DMS 1100 — 3-6 months.
Honeywell L88 Progs. — IDS/TDS preferred — Manchester — 6 months.
Univac Software Progs. — Assembler — Fortran — Manchester — 6 months.
IBM PL/1 Progs. — Various — 3-12 months.
Consultant: Colin Phillips — 0782-623665

EMS Consultants Ltd.
81-83 Lower Street
Newcastle-under-Lyme, Staffs ST5 2RS
Phone: 0782 623665 (10 lines)

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STAFFORDSHIRE, ST5 2RS
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Management Services & Consulting Division
Telephone: 0782 623665 6/7/8
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SURNAME Other Names		Telephone	
Address		Home	
		Bis.	
		Ext	
Post Code	Date of Birth	Place of Birth	Nationality
Age			Height
			Weight
Married	Children	Car Owner	Driver
Nature of any Serious Illness			
Position Required		Required Salary Range	
Present Position		Salary	
WHERE DO YOU WISH TO WORK			
Within U.K.	Yes/No	Acceptable Areas	Abroad
Will you move	Yes/No		Europe
			Middle East
NUMBER OF YEARS EXPERIENCE			
Operating	Programming	Systems Design	Systems Analysis
			Management
Total			
Available for Interviews			
Available for Employment			
DETAILS OF SECONDARY AND FURTHER EDUCATION			
Schools	Date	Examinations Passed	
College/University	Date	Examinations Passed	
Business Courses with Dates			
1. Present Employer		Town	
Position		Date Joined	
TYPE OF INSTALLATION			
Commercial	Bureau	Insurance	Scientific
Manufacturing	Banking	Education	Engineering
HARDWARE		OPERATING SYSTEM	
		LANGUAGES	
Software or Packages			
On-Line	Real Time	Time Sharing	
R.J.E.	Tele Processing	Data Base	
APPLICATION AREAS YOU HAVE BEEN INVOLVED IN (Please Tick)			
Cost Accounting	General Ledger	Manpower Planning	Personnel
Budgeting	Credit Control	Stock Control	Payroll
Forecasting	Order Processing	Production Control	O.R.
Corporate Planning	Marketing	Petrochemicals	Radar
Sales Ledger	Distribution	Linear Programming	Statistics
Purchase Ledger	Traffic Analysis	Simulation	
Projects Completed		Responsibilities	
2. Previous Employer		Town	
Position		Date Joined	
TYPE OF INSTALLATION			
Commercial	Bureau	Insurance	Scientific
Manufacturing	Banking	Education	Engineering
HARDWARE		OPERATING SYSTEM	
		LANGUAGES	
Software or Packages			
On-Line	Real Time	Time Sharing	
R.J.E.	Tele Processing	Data Base	
APPLICATION AREAS YOU HAVE BEEN INVOLVED IN			
Cost Accounting	General Ledger	Manpower Planning	Personnel
Budgeting	Credit Control	Stock Control	Payroll
Forecasting	Order Processing	Production Control	O.R.
Corporate Planning	Marketing	Petrochemicals	Radar
Sales Ledger	Distribution	Linear Programming	Statistics
Purchase Ledger	Traffic Analysis	Simulation	
Projects Completed		Responsibilities	

Reason for Seeking Change			
Details of type of position wanted			
Additional Information			
Please explain below, in an 8 10 line space, your current duties and applications experience			
FOREIGN LANGUAGES			
Spoken	Written	Read	
Please show the number of years experience of the following Where your experience is not specified please use the blank spaces			
HARDWARE	OPERATING SYSTEM	LANGUAGES	PACKAGES/SOFTWARE
IBM 360/370	DOS	COBOL	FILETAB
ICL 1900	OS	FORTRAN	DRIVER
ICL 2960/2970	MVT MFT	ASSEMBLER	CICS
ICL 2903	GEORGE 1	PLAN	IMS
UNIVAC 1100	GEORGE 2	PL/1	BOMB
UNIVAC other	GEORGE 3	RPQ2	D BOMB
BURROUGHS 700-800	MCP	USERCODE	V SAM
BURROUGHS other	Exec 8	AUTOCODE	IDS/TDS
HONEYWELL 66	GCOS	EASYCODER	IDS/TDS
HONEYWELL 6000	OS 2000/200	ALGOL	MICROFILMING
HONEYWELL other	VMEB VMEK	NEAT	TELEPROCESSING
NCR	J Level	CORAL	DMS
ICL System 4		DLI	
PDP			
3. Past Employer		Town	
Position		Date Joined	
TYPE OF INSTALLATION			
Commercial	Bureau	Insurance	Scientific
Manufacturing	Banking	Education	Engineering
HARDWARE		OPERATING SYSTEM	
		LANGUAGES	
Software or Packages			
On-Line	Real Time	Time Sharing	
R.J.E.	Tele Processing	Data Base	
APPLICATION AREAS YOU HAVE BEEN INVOLVED IN			
Cost Accounting	General Ledger	Manpower Planning	Personnel
Budgeting	Credit Control	Stock Control	Payroll
Forecasting	Order Processing	Production Control	O.R.
Corporate Planning	Marketing	Petrochemicals	Radar
Sales Ledger	Distribution	Linear Programming	Statistics
Purchase Ledger	Traffic Analysis	Simulation	
Projects Completed		Responsibilities	
PLEASE CHECK THAT EACH SECTION HAS BEEN TICKED APPROPRIATELY			
ADDITIONAL INFORMATION			
General			
Data Processing			
Terminals			
Software/Packages			
Application Areas			
Projects and Responsibilities			

0782 623665

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

COMPUTER GRAPHICS Sales Executive

£10K basic
Excellent commission • 2 litre car

The world leader in the manufacture and supply of computer graphics equipment has an exciting opening for an ambitious salesman who can negotiate at board level as well as communicate on a technical basis. The financial rewards are exceptional and the benefits are what one expects from a multi-national.

IF YOU LIVE IN BERKS, SURREY, SUSSEX OR KENT CONTACT TONY McGRATH ON 01-637 9611.

Make 1981 a year to remember BECOME A SALES CONSULTANT

We are busy and successful in the sales division, covering the market place from entry level right up to sales directors for major clients across the computer industry.

If you're a data processing person, ambitious, able to talk intelligently, listen, and make sound judgements, you will find the career progression and financial rewards we offer are exceptional.

For further details please contact Tony McGrath on 01-637 9611.

NOTICE BOARD

SENIOR SYSTEMS ANALYSTS London to £12K

Opportunity to work on a variety of development projects on commercial and financial systems. Progressive environment, latest equipment and a full commitment to data processing in terms of both hardware and software.

If you have a sound systems background, preferably on IBM machines ring Diane Oubridge or Diane Williamson on 01-637 9611.

DATA COMMUNICATIONS SALES £15K + CAR Midlands and the North

Expansion of this renowned manufacturer of sophisticated data communications products has created an exciting opportunity for an ambitious sales engineer in the North.

You will have excellent products and the back-up to sell them with confidence to major companies with ever growing communications needs.

High basic salary, good commission and a fully company car. Excellent and the opportunity to develop your career from a multi-national.

For further details contact Tony McGrath on 01-637 9611.

JUNIOR SALESMAN First year £12K + car

Our client, a well-known distributor of a wide range of quality peripheral products, has asked us to identify young intelligent salesmen or graduates who have the desire to break into selling within the computer market place, one of the few booming industries in this country.

If you are ambitious and looking for an exciting career in an environment where technological change is commonplace, contact Robin de Rouen or Tony McGrath for more details on 01-637 9611.

OPENINGS EXIST NORTH AND SOUTH OF ENGLAND AND SCOTLAND.

Recruitment **LOGISTIX** In Informatics

A.T.E. Software

London and Home Counties
Salary to £10K

Real-Time Programmers with at least two years' experience are urgently required by a rapidly expanding supplier of Automatic Test Equipment. In this, one of the fastest growing areas of the Data Processing industry, our clients have an outstanding reputation and supply both the commercial

and defence sectors of the market. Particular hardware experience is not a requirement but fluency in Assembler, CORAL 66, ALGOL or derivative languages is essential. Applicants familiar with Fairchild, Fluke, Genrad or Membrain systems will be especially welcome. Ref: L/49/A

Communications Software

W. Germany: Pkg. to £18K

An established world leader in telecommunications products is seeking to recruit Communications Software Specialists to join existing project teams at its R & D Headquarters in Southern Germany. At least two years' experience in the design and development of specialised software for PBX or PABX systems is essential.

Applicants who are also able to demonstrate a knowledge of digital hardware concepts will be particularly welcome, as will those with experience of programming around Intel 8085/8 microprocessors. Successful candidates will, in addition to a competitive salary, receive relocation expenses and an attractive benefits package. Ref: L/49/B

Software Manager

London: Salary to £10K

A leading British Microcomputer Manufacturer is seeking to recruit a Software Manager to provide software implementation and customer support services for their excellent product range. Candidates should be familiar with current microprocessor and microcomputer technology and in addition be conversant with marketing and sales techniques. It is preferable to have had exposure to both the

hardware and software of such products as Apple, Pet, Comemco, Horizon and the wider range of small business machines currently available. Work content will include software problem solving, customer liaison, presentations and training. This position will appeal to a career-minded individual with a desire to progress into management. Ref: L/49/C

Analyst/Programmers

Central London: Salary to £9K

A leading British Systems and Software Consultancy renowned for its development and implementation of commercially orientated systems currently requires additional Analyst/Programmers. Applications are invited from ambitious, career-minded individuals with the ability to liaise with clients at all levels. You should have a minimum of 18 months' programming ex-

perience and be familiar with commercial applications, e.g. Banking, Insurance, Stock Control, Order Entry and/or Accountancy. Whilst it is not necessary to have exposure to any particular hardware, the company does have a stated preference for candidates with experience of DEC's PDP range. Interviews will be held in London within the next 14 days. Ref: L/49/D

Real-Time Applications

Holland: Salary to £16K

The rapid growth of the Dutch division of an internationally renowned Systems and Software House has led to a requirement for additional Consultants, Team Leaders, Analysts and Programmers. Suitable applicants will probably be numerate graduates who have at least one year's real-time programming experience on any mini or microcomputer. In-depth knowledge of Assembler language is essential for all

positions and of particular interest will be candidates who have specialist expertise in the field of Communications, Networks, Message Switching or Process Control. As a member of a small project team you will be involved in all stages of the design of a system through to the implementation and obviously liaise continuously with the client. Ref: L/49/E

Project Development Engrs.

Thames Valley: Salary to £10K

A leading minicomputer manufacturer having its Head Office in the Thames Valley is seeking several Development and Project Engineers as project team members within the Company's Product Development Unit. All applicants should preferably have an academic background in Electronics or Computer Sciences. These positions contain a high degree of digital circuit design

and logic design whilst a thorough understanding of software techniques is essential. A knowledge of Assembler language gained with either a Manufacturer or Systems/Software House environment will reflect in the salary offered. For certain positions, where customer liaison is necessary, personal communication skills will be highly rewarded. Ref: L/49/F

Mini/Micro S-W Development

Beds./Bucks.: Salary to £10K

Our clients' Research Laboratories are located in a most attractive South Midlands town. Current requirements are for Development Programmers and Software Engineers offering a minimum of two years' Assembler or Basic programming experience on any minicomputer or microprocessor. These positions will appeal equally to those with a scientific/academic computing background or commercially

inclined programmers. Unrivalled development aids on the company's recently upgraded hardware are available for ambitious, career-minded individuals. The ambitious and excellent ancillary benefits represent an outstanding opportunity for those keen to participate in 'state-of-the-art' software and firmware projects. Interviews can be arranged both locally and in London. Ref: L/49/G

Logistix, 10 Grenville Place London SW7 4RW

01-273 3063 **LOGISTIX** Telex: 28800

William Key

A selection of our Key vacancies:

6 years' + IBM Cobol experience is needed by this company which currently has 2 x 370/145 with 2 x 4341s on order. Ref: TA/1

SYSTEMS ANALYSTS CITY to £10,000

2 years' + commercial experience for IBM 3033 installation. Ref: TA/2

SYSTEMS PROGRAMMER CITY to £10,500

2 years' + MVS experience is needed for this IBM 3033 installation. Ref: TA/3

SENIOR PROGRAMMERS CITY to £12,000

Sound PL/1 or Assembler experience for IBM 370/145 and 155 user. Ref: TA/4

SYSTEMS PROGRAMMER ESSEX to £11,500

With 3 years' + DOS VS CICS experience. Hardware is IBM 370/135. Ref: TA/5

SNIL SYSTEMS ANALYST NORTH LONDON to £10,750

With 5 years' + systems experience (including on-line) for IBM 370/145. A 4341 will be installed shortly. Ref: TA/6

CHIEF PROGRAMMER DESIGNATE MIDDLESEX to £10,000

4 years' + IBM Cobol experience for an IBM 370/135 installation. Ref: TA/7

FREELANCE SYSTEMS DESIGNER LONDON to £500 per week

Real-time systems design experience for Intel 8085/86 installation. Ref: TA/8

For details of these and many other opportunities ring Tim Armstead on 01-493 2947 (office hours) or Epsom 25384 (evenings and weekends).

Roger Allington, OCC Contracts Ltd.
1 Shootersway Park, Berkhamsted, Herts
WILLIAM KEY & PARTNERS LTD., 4 HALF MOON STREET, LONDON, W.1

REAL TIME SOFTWARE

HARROGATE

£5,085 p.a.-£10,600 p.a.

Applications are invited for the post of Research Officer within the Control and Instrumentation Division of the Regional Scientific Services Department, based at Harrogate.

The successful candidate will join a group which is actively engaged in developing real time system software for hierarchical distributed micro and mini computer systems, to be used for on line data acquisition, display, monitoring and control of modern generating plant.

Applicants should preferably be in their twenties and have a good degree in computing science or equivalent qualifications. Experience with CORAL 86 and familiarity with PDP 11/LSI 11 HES PDP are an advantage.

Essential experience with multi processor systems work would be most welcome. Consideration will also be given to fresh graduates who can demonstrate

initiative and enthusiasm, together with a desire to apply advanced computational techniques to the solution of defined system problems.

The Department's Laboratories are pleasantly situated in modern buildings on the edge of the Yorkshire Dales. Attractive conditions of service are provided together with excellent restaurant and cafeteria services, whilst sports and social facilities are available on the site.

Applications in writing giving full details of age, experience, present position and salary, should be addressed to the Regional Personnel Manager, Central Electricity Generating Board, North Eastern Region, Beckwith Knowle, Osley Road, Harrogate.

CVs should arrive not later than Tuesday 16 December 1980. Further information, if required, is available by telephoning Harrogate 722559.

Please quote the reference number SVN/426/K/A on your application.

Central Electricity Generating Board - North Eastern Region

CC communications

The Travicom System is the world's foremost multiple access airline reservations, ticketing and accounting system. Some 500 United Kingdom travel agents already have direct visual display connection to the seat booking processors of 20 leading international airlines for these purposes.

The Travicom 2 System now being developed at Maidenhead will retain the world lead by increasing several-fold the power available for message switching and translation. It will operate with Packet Switched Services or with Dedicated Data Networks and will extend the range of services to include package tour, hotel, car rental, sea ferry and rail bookings, ticketing and accounting.

KLM have chosen the Travicom 2 System for use throughout Holland. Other airlines and telecommunications authorities are about to do so for their countries.

If you are an experienced programmer or software engineer familiar with any of the following:

- DEC or Zilog hardware
- RSX-11 operating systems
- COBOL, Assembler, Micro-Cobol languages
- Data Communications, Accounting or Commercial systems

and are interested in joining an expanding and exciting project with opportunities to travel and work abroad please contact us for more information.

Travicom 2

Telephone Personnel Department, Maidenhead (0628) 71511, Ext. 42, or write to Computer Communications Limited, Fleming House, 100a Strand, London WC2R 0EX.

Sales Executive

Advanced Management Information Systems
Negotiable Package

LONDON AREA

- + Training in the United States
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Prize schemes:-
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The Company also wishes to recruit
a Trainee Sales Executive —
an outstanding opportunity
for a person wishing to enter sales.

Attractive package.
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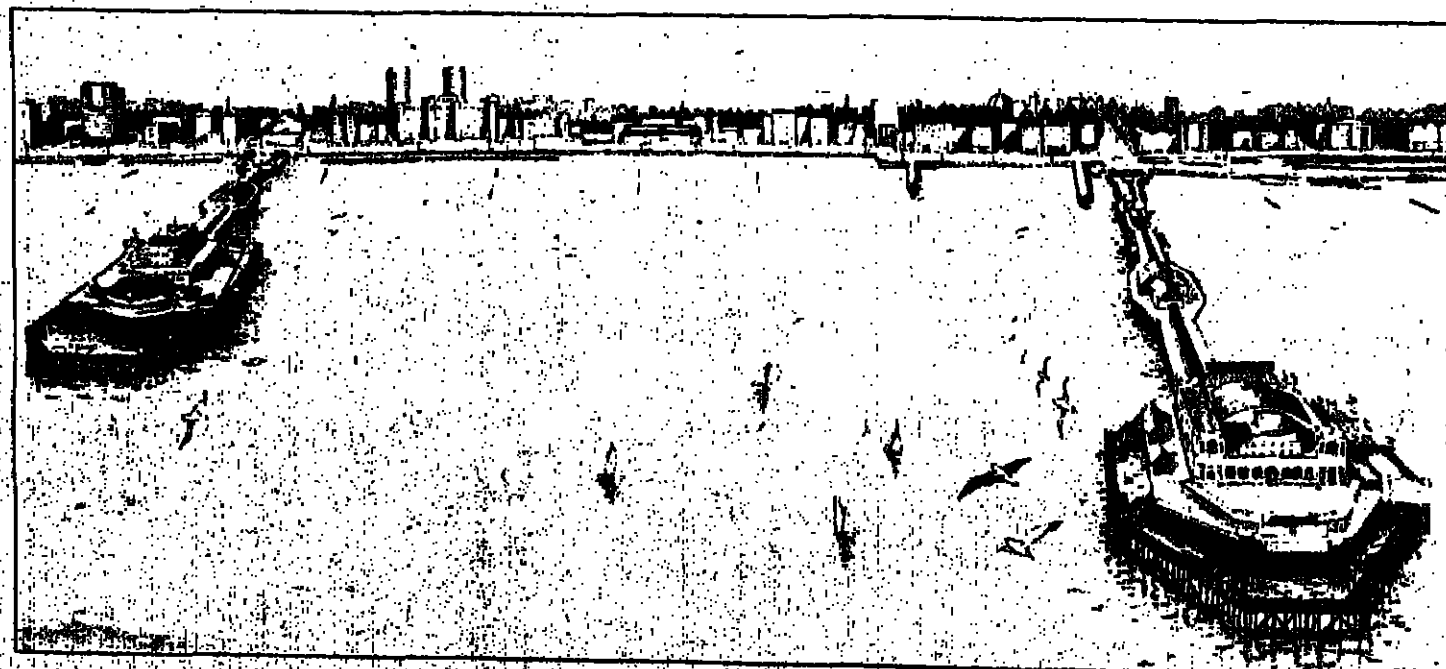
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Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
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JOBS WITHOUT PEER IN A TOWN WITH TWO PIERS



With the ever changing technology in the telecommunication field, we at ITT Creed Limited, part of ITT Business Systems Group, want to expand our Software Department, which will be embarking on a new project early in 1981.

As a result, there is a need for EXPERIENCED SOFTWARE SYSTEMS DESIGNERS to join our team at the design stage of the project. It is your chance to be 'in at the birth' and work through to a position of team leader during the implementing and testing phases of the product. One of these senior people will be based towards the quality control and testing aspects of the project.

If you have had several years' experience in Software Systems Design and have specific knowledge in any of the following, we would like to hear from you:

- Imbedded operating systems
- Text editing or word processing type applications
- Communications, line handling, networking, protocols
- Software development for Microprocessor target H/V

Our development facilities are based around a PDP11/70 running the UNIX operating system.

These positions may involve some international travel to liaise with our sister company. You will receive a competitive salary and the prospects for a talented designer are very bright. Some of the many benefits offered include 25 days holiday and a generous relocation package if it is necessary to move to the Brighton area, which in itself is a bonus.

Please send full career details to Mr. Ray Hooker, ITT Creed Limited, Crowhurst Road, Hollingbury Industrial Estate, Brighton, Sussex, or telephone Brighton (0273) 607111 Ext. 3514 for an application form. (Answering service after office hours is available).

ITT Creed Limited



Will you be part of Europe's most advanced custom IC design facility?

At the Wembley site of Marconi Electronic Devices Limited, we're creating what will be the most advanced VLSI design facility in Europe — a centre dedicated to the production of specialist micro devices for a wide range of customer industries.

Device design is supported by extensive computer aided design systems based on Applcon Graphics Systems, GEC 4000 Multi-access System and the powerful VAX 11/780. Because of the continued growth in demand we now have the following opportunities for men and women, all of which are new positions:

CAD Programmers

With strong Fortran and machine code experience, to work closely with logic and layout designers on a wide range of specialist software. We're looking for effective and open-minded problem solvers.

Salaries will be negotiable and extremely competitive and will be enhanced by a top line benefits package, with relocation expenses paid where applicable.

If you feel that you could provide the quality of support we're seeking, please write with brief career and personal details to: Mrs. K. Morton, Personnel Officer,

Marconi Electronics Devices Limited
East Lane, Wembley, Middlesex HA9 7PP, or telephone 01-908 4111

(3801)

who have the ability to keep up with the ever-increasing complexity of micro device design. Applicants should be of graduate calibre with a heavy electronics background and at least 2 years' CAD experience.

Computer Room Manager

This is a demanding role calling for first-class administration skills. The prime task will be to maximise designer access through the efficient scheduling and smooth running of computer facilities and the maintenance of an effective archiving service. Applicants should have a good operations background and could well be shift leaders looking for a career step upwards into a dynamic and highly successful organisation.

DP Team to set up a New Management Information System

To cope with the increasing Management Information requirements brought about by company expansion an engineering company situated in the North of London is establishing a new department. The new system will cover such functions as stock control, sales information, budget labour control, production, purchasing and accounting. There will, therefore, be considerable scope for suitably qualified men and women, with good business systems experience. Immediate requirements are for:-

Systems Analysts

Senior Analysts and Analysts are required with sound experience of manufacturing and production techniques and finance. Administrative ability is essential, particularly for the senior positions, and a knowledge of COBOL is desirable.

Programmers

Senior Programmers and Programmers are required with experience preferably in a MIS environment using COBOL. Experience of CIMCOM's TOTAL database management systems would be desirable. Applicants without TOTAL and COBOL experience will be considered, as training can be given.

All positions carry attractive salaries and benefits including assistance with relocation, where appropriate.

Write with details of experience to Position Number AMD 8086, Austin Knight Limited, London W1A 1DS. Applications are forwarded to the client concerned therefore companies in which you are not interested should be listed in a covering letter to the Position Number Supervisor.



Austin Knight Advertising

Metropolitan Borough of Rochdale

AN EQUAL OPPORTUNITY EMPLOYER
TREASURER'S DEPARTMENT.

TECHNICAL SUPPORT PROGRAMMER

A.P.S.O. 1 £8,750/£7,998 (from April 1981) £6,870/£6,130.

Rochdale is currently implementing VME/K to run on its 2860 Mainframe. Conversion work will be put to a minimum by re-designing older systems. New developments are also planned.

Applications are invited from Programmers having a minimum of 2 years' experience. VME/K training will be given as necessary.

Application forms and further details are obtainable (by sending ref. E317) from the Chief Personnel Officer, P.O. Box 88, Municipal Offices, Smith Street, Rochdale, OL16 1XG (telephone Rochdale 47474, Ext. 852), to be received not later than Thursday, December 18, 1980.

ROBOTICS PROGRAMMER

We need a bright Programmer/Engineer to join our team on research, development and maintenance of Robot Control Systems software. Should have some experience in Assembly Language programming of Microprocessors or Minicomputers. Would suit younger person willing to learn and develop with the company.



Commensurate salary.
Contact Max Parker at
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WAY, WATFORD,
HERTS. TEL: WATFORD
(0923) 39422.

(3775)

ANALYST/PROGRAMMERS

London IBM Cobol/PL1/Mark IV

Tel: Roger Barnes on 01-628 4200.
485 Cophall Avenue, EC2R 7DA
(0122) 31221

If you're on form... ...fill in this one.

If you're performing really well in your present job, you'll be keeping your eyes open for something better.

But being a top performer, you've got better things to do with your time than pore over pages of job ads and make dozens of phone calls.

So to save time, and to get yourself lined up for some of the best jobs going, just fill in our application form.

We'll then get back to you fast with details of jobs that are exactly right for you.

Personal

Please write in ballpoint, using block capitals.

Surname _____ Forenames _____ Mr/Ms

Address _____

Tel. Home _____ Office (discretion will be used) _____

Age _____ Nationality _____ Car? _____

Are you prepared to relocate in UK? ☐ Abroad? ☐ (tick box)

Experience

Place no. of years in box, e.g. IBM 360/370

Machines:

Please specify model.

IBM 360/370 ☐

IBM others (specify) ☐

ICL 1900/2900 ☐

ICL others (specify) ☐

Honeywell ☐

Univac ☐

Burroughs ☐

PDP ☐

Other mainframes ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

Other mini-computers (specify) ☐

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Telecommunication Systems Development Up to £10,000

For people with at least 4 years experience in computing and an interest in developing such current technology as micro-computer data capture in the implementation and design of highly sophisticated telecommunication networks, Ladbroke Racing have got exactly what you're looking for.

They are looking for someone with proven computing ability and knowledge of telecommunication network design to help them in the design and development of highly advanced, original technologies relating to telecommunications and data capture.

The work is stimulating, remuneration and benefits excellent and career prospects are outstanding.

If you have what it takes and can liaise competently with all levels of management, Ladbroke Racing would like you to contact them.

Just write to Mrs. Marjorie Cobban, Ladbroke Racing Ltd., Hanover House, Lyon Road, Harrow, Middx.

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SOFTWARE PACKAGES COMPUTER SECURITY RECRUITMENT ADVERTISING FACILITIES MANAGEMENT
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IBM 8100 COBOL ANALYST/PROGS.

We have several projects currently in London and the Home Counties with immediate starts for 3-12 months' duration.

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Six month contract starting January in Western Home Counties location.

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We have various projects starting within the next 6 weeks for good JSP Pre-processor experienced personnel.

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We are looking for an experienced COBOL Analyst/Programmer with in-depth knowledge of TIP for initial 6 month contract.

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Inventory control experience essential for 12 month contract.

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Immediate start for initial 4 month contract.

IBM OS COBOL PROGRAMMERS

January start for initial 3 month contracts in West London.

ICL 2900 COBOL + VME/B PROGRAMMER

January start for experienced VME/B personnel. Initial 3 month contract.

ICL 2903 COBOL + TPS PROGRAMMERS

Several vacancies to work on Pensions System starting January.

PDP11 MACRO 11/FORTRAN IV. MUNICH

Immediate start for 6 month contract. All levels of personnel required.

IBM BANKING ANALYST/PROGRAMMER

Immediate start for 6 month contract; also requirements for next year.

IBM IMS (DB and/or DC) COBOL

We have vacancies for personnel with varying levels of experience for several projects starting in 1981.

To discuss these and many other contract opportunities, please call us any weekday up to 8 p.m.

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Up to £6,500 pa.

We require competent Operators to work on our installation of two 1904Ss and two 2980s, with numerous peripherals including on-line equipment.

To join these teams operating a shift system covering Monday to Saturday (34 hour, average four day week) you should be aged over 19 years, with a minimum of 1 year's experience on ICL 1900 or 2900 series.

You can expect to earn up to £6,500, inclusive of shift allowance. Benefits include relocation expenses, house purchase scheme, four weeks' annual holiday, non-contributory pension, free life assurance, luncheon vouchers, 24 hour staff restaurant etc.

For further details and an application form telephone Mrs. R. Sidders on 01-952 2333, or write to her at:

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Clearing Services Limited,
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Edgware, Middlesex.

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These supermini manufacturers/turkey houses are growing at 50% p.a. — or better. New powerful hardware — new applications — new markets — all providing new opportunities in Service and Support for experienced computer engineers.

START £800 + O/T + BONUS + CAR

London/Home Counties
Big systems house with US backing. Customer engineers joining now will be selected for the new 1981 Support team on large/advanced mini systems — a unique career opportunity!

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London/Home Counties/Birmingham
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Consultants Ref. EK2189

AB EXECUTIVE (KINGSTON) LTD.
01-549 6441

SENIOR PROGRAMMER

Salary £9411-£10842 p.a.

CAN YOU HANDLE AN ON-LINE SYSTEM?

Thames Valley Police are looking for an experienced Senior Programmer to perform development and maintenance work on a computer on-line system. A challenging series of extensions to this system and to associated IDS batch programmes is envisaged.

The successful applicant will have extensive COBOL experience on an on-line system, preferably but not exclusively with Honeywell 8000/Level 88 using IDS and TDS. He/she must be willing to take an increasing interest in the maintenance of existing software, and development of future systems, and be capable of working on their own and to rigid standards. He/she will also have the ability to communicate at all levels and to instruct staff in the basic systems.

Over four weeks' holiday, pension scheme, assistance towards removal expenses.

Application form and further particulars from: The Principal Personnel Officer, Thames Valley Police Headquarters, Kidlington, Oxfordshire, OX5 2NX (Telephone Kidlington 4343, ext. 287).



Applications are invited for the following posts:

TREASURER'S DEPARTMENT ASSISTANT COUNTY TREASURER (COMPUTER SERVICES)

Grade: PO2(g) £11,822-£12,714 per annum

Applicants must have considerable experience in the control, management and operation of large scale data processing activities.

The computer installation consists of an ICL 2980 with 2 Mb store, exchangeable disc storage, and communication facilities providing an RJE service operating under DME. In addition to the wide range of financial and non-financial applications operated for the Department and the County Council and the District Police Authority, facilities are also provided for the six District Councils of the Area.

The Officer appointed will lead a section of 32 staff and will be expected to make a positive management contribution to the work of the County Treasurer's Department and to extensive future system development.

Application forms, returnable by the 18th December, 1980, are available from the Director of Personnel and Management Services, County Hall, Carmarthen.

CANVASSING DIRECTLY OR INDIRECTLY WILL DISQUALIFY

SENIOR PROGRAMMERS

We require Senior Programmers for contracts in North-West with a minimum of 2 years' experience in PASCAL or COBOL plus a good knowledge of PDP11 systems. Good promotional prospects.

Apply to: Mr. T. Langham, I.S.D. LTD., Station House, Telton Road, Warrington, Cheshire, WA9 6JF.

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Airborne Software, It's the problem to our solutions

Finding answers really isn't too difficult, it's developing the solutions that takes the skill.

And when you design and develop applied electronics systems for military and civil applications, those solutions are complex.

They are also the result of a great deal of technical skill and highly creative thinking on the part of our software engineers.

Because in developing them we rely heavily on computer power, and, with it, some very sophisticated software.

So as a Software Engineer with us, you'd be assured of plenty of challenge.

After all, one of our current projects, the real-time software for Nimrod AEW Mk. 3 is the most technically advanced system of its kind in the world.

And because our software engineers work in small teams, each of which is responsible for the design of a specific aspect of a system, from inception to implementation, you'd also be

assured of plenty of scope for your ideas.

Surprisingly, perhaps, many of our most successful people come to us without any knowledge of avionics.

But whether or not they know our field, one thing that each of these men and women has in common is a commitment to excellence gained in data processing and programming.

Something we recognise and reward with a salary, career prospects and other benefits that are the hallmark of the professional.

And Chris Hill on 01-953 2030 ext. 3449 would like to tell you more. Once he has, we think you will want to become part of the Marconi team right away. Alternatively telephone 01-207 3455 anytime day or night.

If a telephone call is inconvenient, you can always write to us, with details of your career, at: Marconi Avionics Limited, Elstree Way, Borehamwood, Hertfordshire, WD6 1BR. Please quote reference MA 80/53.

MARCONI AVIONICS
A GEC-Marconi Electronics Company

New Career Horizons and Hampshire..... in one move



BOCM Silcock is a Unilever Company and a market leader in the manufacture of sophisticated farm animal feeds throughout the UK.

We wish to strengthen our development and maintenance team to support a major programme of existing applications and new developments. As part of the total company DP plan, development of several large applications for factory operational activities

including order processing and factory planning — is due to commence shortly.

Our policy of distributed processing is supported by a wide range of hardware with appropriate communication links: ITEL AS/6 mainframe, 3 PDP 11/34s, 20 Datapoint minis plus microcomputer equipment.

Project Leader — c. £8000 — £11,600

This new appointment, reporting to the Computer Development Manager, involves active participation in development projects at all stages from feasibility study to implementation including systems analysis and design, project planning and project leading.

Systems Analyst/Programmers — Salary Range £6000 — £8000

Activities include system and program specification, program design, writing, testing, implementation and support, assisting in user training and liaison with project and user management.

For all appointments, employment terms and prospects of advancement are excellent with generous re-location assistance available if appropriate. The positions are based in Basingstoke which is within easy reach of London yet has the advantages of a rural location and good access to the South Coast and New Forest. Candidates, male or female, interested in joining us should indicate their initial job preferences and send brief but comprehensive personal and career details (including salary) to:

BOCM SILCOCK

Alan Coates,
Staff Personnel Manager,
BOCM SILCOCK LTD.,
Basing View, Basingstoke, Hants.
Tel: Basingstoke 29211, Ext. 378.

COMMS SOFTWARE

Designers and Programmers wanted by Berkshire-based supplier of Comms Systems. Expertise in X25, operating systems, Pascal and Assembler urgently required for new and existing project teams.

£7-11K

PL/1

Programmers and Analysts with strong PL/1 programming background, ideally with DB/TP or other specialist IBM knowledge, required for UK, European and Middle East assignments operated by British Systems House, London interviews.

£ neg.

HOLLAND

Programmers (3+ years), Analysts and Designers with experience of Macro 11 (under RSX-11M), DC, Intel or T1 Assembler required for scientific/technical projects currently being operated by UK Systems House overseas.

£13-18K

SNR PROGRAMMER HERTS

Senior Programmer required by large IBM and Mini user for newly-created technical support role — experience of CICS, DL/1 and JSP desirable. Responsibilities include involvement in Systems Design, standards, etc. Large company benefits apply.

c. £8K

GERMANY IBM

Analysts and Programmers wanted to work on IBM compatible systems at European division of leading Computer Systems Manufacturer. The requirement is for Assembler, TSO and DB/DC experience. Relocation assistance and excellent benefits package.

£12-18K

FRANCE COBOL

IBM COBOL and PL/1, minimum 4 years' experience with knowledge of IMS, DL/1, CICS a considerable advantage, wanted for projects being operated by British Systems House in France. Relocation offered.

to £18K

PROCESS CONTROL

Programmers and Analysts with 3+ years' mini or micro Assembler (DEC in particular) experience plus relevant (i.e. scientific) degree required for producer of Industrial Control and Automation Systems. Offices in Herts.

£7-10K

2900 VME/B

Analyst/Programmers and Analysts, COBOL programming, back-ground required for new project being undertaken by Systems House in Central London. 2 or more years' experience in large ICL 2900s under VME/B required.

to £12K

MIDDIX - COBOL

Programmers, Analysts and Team Leaders with COBOL experience and, ideally, some knowledge of structured programming techniques, required to meet expansion plans for development centre of leading manufacturer. Degree preferred, no specific h/w background but commercial/financial applications experience necessary.

to £10K

MACRO 11

Programmers and Analyst/Programmers with 2+ years' Macro 11 wanted to join young but rapidly growing Software House. Projects are technical, scientific and military, so knowledge of COBOL, Fortran etc. is an advantage. Offices in London, projects in diverse locations.

to £10K

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COMPUTER WEEKLY CHRISTMAS PUBLISHING ARRANGEMENTS

In view of the Christmas holiday the December 11th and 18th issues of Computer Weekly are being combined and published on December 11. The December 25 issue will not be published.

Classified copy for the January 1, 1981 issue should arrive no later than 10 a.m. Tuesday, December 23.

COMPUTER WEEKLY

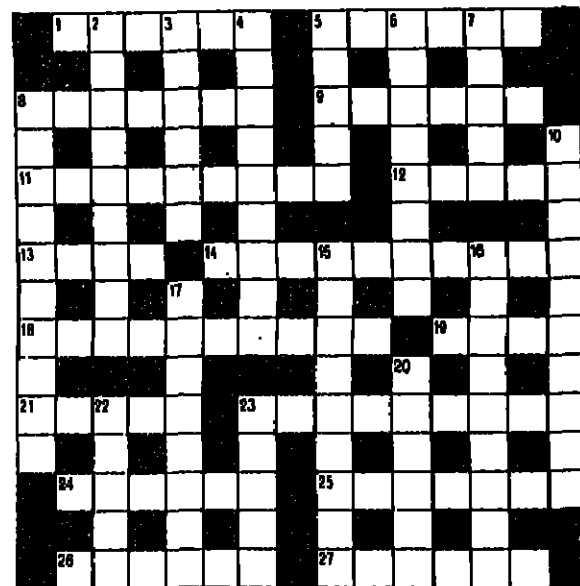
Quadrant House, The Quadrant, Sutton
Surrey SM2 5AS
Tel: 01-661 0121

01-661 0121

CW Prize Crossword 11

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Computer Weekly Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first post, Friday, December 12. Please use a ballpoint to complete the crossword.



ACROSS DOWN

1. Backward bachelor taken into employment and reviled (6)
2. Tosses, we hear, with violent pangs (6)
3. Skate, perhaps, round pool with no front piece? That's unwise (7)
4. Unassuming, kind and good man (6)
5. 11, 12. Deciphered, like articles in a closing-down sale? (7, 2, 5)
6. A small number live in retirement - it's dark and very hard (4)
7. Suppliers of light vessel lead astray the feminine supporter (10)
8. Lively dance causes a storm - tell one about it (10)
9. Something curvaceous - my goodness! (4)
10. 21, 23. Where you'll find no old coppers asleep? (2, 3, 4, 2, 3)
11. 24. Cook that's masculine, not scooped out inside (6)
12. Love, receiving allowance, gives formal address (7)
13. Long to embrace listener, beloved one (6)
14. Channel, initially tranquil, but getting turbulent (6)
15. Mental institution, extensive, with space all taken up (9)
16. The cane's a change from the usual procedure (6)
17. Dry, awfully dry and heated (9)
18. Assembled up above the river in time (5)
19. Detective branch I set up in control causes derision (8)
20. A portion of golden street-pudding's to follow (5)
21. The police train a bit oddly? Definitely (3, 7)
22. Prepare for battle, old fellow, the final battle (10)
23. Making about a pound abroad, dealing sparingly (6, 3)
24. Pray for unlimited period at the wicket, being an opener (9)
25. Rambling rose - can't get one high up in the tree? (6)
26. A vegetable too apt to get mashed (6)
27. Find whereabouts of overturned eastern vehicle (5)
28. Loyal subject, for example, detected in falsehood (5)

RULES AND CONDITIONS

1. Each competitor may submit no more than one entry.

2. The competition is open to all readers of Computer Weekly with the exception of the staff of IPC Business Press Ltd, any printers employed by them or the near relatives of any such staff.

3. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

4. Winners will receive their prizes during the month following the competition.

5. The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

ROBOTICS PROGRAMMER

We need a bright Programmer/Engineer to join our team on research, development and maintenance of Robot Control Systems software. Should have some experience in Assembly Language programming of Microprocessors or Minicomputers. Would suit younger person willing to learn and develop with the company.

HA

Consultants salary. Contact Max Parker or Robin Ashdown, HALL & CO LTD, 100, WATFORD WAY, WATFORD, HERTS, TEL: WATFORD (0923) 58452. (0778)

ANALYST/PROGRAMMERS

London IBM Cobol/PLI/Mark IV

Tel: Roger Barings on 01-688 4000
48d Cophall Avenue, EC2R 8JH

COMPUTER OPERATOR - CROYDON

Must have experience on PDP 11/70 under RSX 11/M. Excellent salary + company benefits. Urgent requirement. Please contact Sybil Day.

FORGE 8
Computer services
8 Mint Walk, Croydon. 01-680 3761

REAL-TIME SOFTWARE DESIGN

London Up to £12,000

Our client is an established supplier of quality real-time and other computer bureau services to several blue chip organisations.

They are a technically adventurous organisation, having designed their own database and real-time systems. This has meant that they have a much more interesting technical section than is usual in a commercial environment. The result is an opportunity for graduates to be involved with real-time systems, database and data communications software.

A major enhancement of the twin CPU's together with a significant expansion of the intelligent terminal network will give further opportunity for the group (of four people) to develop their skills and give full job satisfaction.

If you have substantial system software experience (perhaps five years or more) and are seeking a technical challenge in a company that provides significant benefits in addition to salary, and has offices in an interesting part of Central London close to tubes and with easy access to mainline stations, then ring us, in confidence, quoting reference 315. (Messages will be recorded after hours.)

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COMPUTER WEEKLY CHRISTMAS PUBLISHING ARRANGEMENTS

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COMPUTER WEEKLY
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Over 100 positions for all levels of computer staff. Commercial and scientific applications.

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COMPUTER CENTRE - SYSTEMS GROUP

SYSTEMS MANAGER

Applications invited for this post to head the Systems Group in the Computer Centre.

The Group is responsible for all systems programming aspects of supporting large ICL 1908A and DEC 2060 systems, various mini and micro systems, linear and intra campus networking, and a wide range of graphical devices.

Applicants (m/f) should possess a good honours degree or its equivalent and preferably a higher degree. A number of years' experience in computing in a relevant environment is essential and successful candidates will be able to demonstrate explicit achievement in the provision of facilities in a full operational service.

Salary, according to age, qualifications and experience on Principal Computer Officer Scale £11165-£13080 plus superannuation. Further information obtainable from Director, Professor P. Jarratt - 021-472 1303, Ext. 2233.

Further particulars available from Assistant Registrar (Sol. and Eng.), P.O. Box 363, Birmingham, B15 2TT, to whom applications (3 copies) including full curriculum vitae and naming three referees, should be sent by Monday, December 22, 1980.

Please quote ref: CW27. (1780)

METROPOLITAN BOROUGH OF Rochdale

AN EQUAL OPPORTUNITY EMPLOYER

TREASURER'S DEPARTMENT TECHNICAL SUPPORT PROGRAMMER

A.P.6/S.O. 1 £8,760/£7,998 (from April 1981 £8,870/£8,139)

Rochdale is currently implementing VME/K to run on its 2880 Mainframe. Conversion work will be cut to a minimum by re-designing older systems. New developments are also planned.

Applications are invited from Programmers having a minimum of 2 years' experience. VME/K training will be given as necessary.

Application forms and further details are obtainable (by quoting ref. E317), from the Chief Personnel Officer, P.O. Box 88, Municipal Offices, Smith Street, Rochdale, OL16 1XG (telephone, Rochdale 47474, Ext. 662). To be received not later than Thursday, December 18, 1980.

UMIST

LECTURER IN SOFTWARE ENGINEERING

REF: COW/224. A Lecturer is required in the Department of Computer Science to take part in the ongoing programme of research and teaching in the area of software engineering. Applicants should have a PhD in computer science, or equivalent qualification and experience, and a sound knowledge of the programming language Pascal. Experience in language implementation would be an advantage. It is a full-time post.

COMPUTER OFFICER IN SOFTWARE ENGINEERING

REF: COW/225. A Computer Officer is required in the Department of Computer Science to carry out software development and maintenance in support of research and teaching in the area of software engineering. Candidates should have a degree or equivalent qualification and experience, and a sound knowledge of the programming language Pascal. Experience in language implementation would be an advantage. It is a full-time post.

Data Control Supervisor

£6,275-£7,349 + Metropolitan weighting - Enfield

Eastern Gas of Enfield have just restructured various activities within the Management Services Department at their modern Tower Point offices in Enfield and now have an important position available in the Data Control Section.

Responsible for the day to day running of one of two Sections under the direction of the Data Control Officer, he/she will be mature and sufficiently experienced to be able to organise the daily batch work flow and re-runs, ensure training schedules are implemented and processed and that sections are manned adequately.

To qualify for this responsible position applicants should have a knowledge of 1900/2900's at least four years relevant Data Control experience, two of which must have been in a supervisory capacity. There are definite career opportunities for someone who can learn quickly and is excited at the prospect of working on new machines and advanced systems.

Salary offered is in the range of £6,725 - £7,349 + £536 p.a. metropolitan weighting and a range of generous benefits, including subsidised staff restaurant, pension and sick pay schemes, etc.

For an early interview please contact:

The Personnel Department,
Eastern Gas,
Tower Point, Sydney Road,
Enfield, Middlesex.
Tel: 01-366 1234.

EASTERN GAS

KUWAIT - MINI ENGINEER

c. £12,000 Tax Free + Benefits

A substantial Danish group has a well established computer services operation working in Kuwait and expansion has created the need for a further computer field engineer to be responsible for equipment servicing throughout the country. Installations comprise DEC PDP 11 and Systime CPU's, with CDC disc units and Tektronix/Calcomp graphic display units.

The company provides business computer systems, software consultancy and computer based telephone systems. Experienced engineers with a sound background of servicing these types of hardware will find this an exceptional opportunity to join an effective and expanding European group.

An attractive salary is offered for the area together with a comprehensive benefits package including car allowance, return air fares to home country for 1 month's holiday and free furnished, air conditioned accommodation. The appointment is initially for two years with 4 weeks bonus on completion and the option to continue.

The requirement is urgent and interviews will be conducted in the U.K. week commencing 16th December 1980.

Engineers having relevant experience should telephone immediately to discuss the requirement and how to apply. Either single or married status is acceptable. Please quote reference CW 164-C.

CAPP ASSOCIATES 01-686 9693

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FOR FURTHER DETAILS OF THIS WEEKLY FEATURE CONTACT

OWEN KELLY
01-672 8861

Rcn
Royal College of Nursing

Computer Manager Cardiff c. £10,000

This challenging post is created by the installation of a Honeywell L64/DPS2 in the Membership Records Department of the Royal College of Nursing. The College is both the professional organisation and trade union for nurses, with a current membership in excess of 170,000 and growing. Computerisation of membership records and subscriptions is the initial and major task, to be followed by the provision of an in-house service to other departments of the College. The computer will use a network of terminals in Cardiff and London and candidates should have a sound knowledge of communications and database techniques.

Whilst salary and conditions of employment are good it is regretted that assistance with relocation costs cannot be given.

For further details and an application form telephone or write to the Personnel Officer, The Royal College of Nursing, Henrietta Place, London W1M 0AB, Tel: 01-580 2646.